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FLORA OF PERU

BY

J. FRANCIS MACBRIDE

ASSOCIATE CURATOR OF THE HERBARIUM, DEPARTMENT OF BOTANY

Fieldiana, Botany

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FLORA OF PERU

J. Francis Macbride

ELATINACEAE. Elatine or Waterwort Family

Reference: Niedenzu in Pflanzenfam. ed. 2. 21: 270–276. 1925.

Small herbs, at least the Peruvian, with opposite leaves, thin stipules and minute or inconspicuous axillary actinomorphic hermaphrodite 2–5(–6)-merous flowers. Sepals free or united toward the base. Petals and stamens on the receptacle, the inner stamens sometimes aborted. Styles distinct, the stigmas capitate. Fruit capsular with axillary placentae. Seeds longitudinally and transversely striate.—*E. nivalis* Speg., Argentinian, has no stipules, according to the author.

ELATINE L.

Glabrous herbs of shallow pools or wet places, the 2–3-merous flowers usually solitary. Sepals united toward the base (at least the Peruvian species), membranous as the capsules.—The similar genus *Bergia* L. characterized by firm sepals and capsules, the former often cusped by the sharp midrib, may be found as an introduction since *B. verticillata* Willd. of Egypt and India has apparently been collected on the southern coast of Ecuador. It is a rather coarse herb with verticillate pentamerous flowers.

Elatine peruviana Baehni & Macbr. Candollea 8: 21. 1940.

Glabra, humifusa; caulibus repentibus et adscendentibus ad nodos radicantibus; foliis late ovatis vel obovatis, acutis, in petiolum late attenuatis, 2 mm. longis, vix 1.5 mm. latis vel inferioribus fere sessilibus et suborbiculatis, 2 mm. latis, integris; floribus solitariis; pedunculis 3–4 mm. longis; sepalis 3, ovato-acutis, integerrimis 0.5 mm. longis; petalis late ovalis minutissime ciliolatis 1.5–2 mm. longis; staminibus 3, filamentis e basi valde dilatatis; capsulis depresso-globosis; seminibus oblongis leviter curvatis 0.75 mm. longis, longitudinaliter 6–7-lineatis, transversim lineis elevatis multo-clathrata. —*E. peruviana* seems to be nearest *E. Lindbergii* Rohrb. in Mart. Fl. Bras. 14, pt. 2: 321. *pl. 72.* 1872, but the sepals are entire and the leaves not cordate.

Since writing the above, Fassett, Rhodora 41: 367–376. 1939, has presented a revision of the North American species and shown

that the fundamental character is found in the seeds. The seeds of *E. peruviana* are about 732 μ long, 300 μ thick, with about 15 pits in each row. The type formed mats in a sunny mossy bog, the flowers faintly green-tinted, the anthers black.

Huánuco: Mito, 3,000 meters, *1544*, type, Field Museum.

Elatine triandra Schkuhr, Bot. Handb. 1: 345. *pl. 109b*. 1791.

Diminutive herb similar vegetatively to *E. peruviana* but the 2–3-celled capsules sessile; leaves linear to spatulate, often emarginate at tip; cf. Fassett, l.c. 369.—The Peruvian form is probably variety *andina* Fassett, l.c. 374, the seeds 460–680 μ long, 160–280 μ thick, with 8–10 rows of 12–19 pits each. Type from Sorata, Bolivia.

Puno: Sachapata, *Lechler 2687* (probably, from range but material seen meager). Bolivia; Chile.

FRANKENIACEAE. Frankenia Family

Reference: Niedenzu in Pflanzenfam. ed. 2. 21: 276–281. 1925.

More or less suffrutescent herbs, or shrubby, with crowded often opposite leaves that, revolute, sometimes appear ericoid. Flowers small, solitary or cymose, hermaphrodite, the 4–6 connate sepals enclosing the valvular capsule, the same number of imbricate petals clawed and with (often) a scale-like appendage within. Stamens usually 6, hypogynous. Ovary superior, 1-celled with 2–4 parietal placentae, the ovules many.

FRANKENIA L.

Stems round. Foliage glands rather superficial. Flowers cymose-paniculate.—Possibly occurring is *Anthobryum* Phil., a densely matted ligneous "cushion" plant with quadrate stems, deeply sunk glands and solitary terminal flowers; two species approach southern Peru, *A. aretioides* Phil. of northern Chile, its stamens 5 and *A. triandrum* (Rémy) Surgis, Rev. Gén. Bot. 34: 455. 1922 by inference and ex Ndz. l.c. 281 (the combination overlooked by bibliographers), its stamens 3, Bolivian.

Frankenia chilensis Presl in Roem. & Schult. Syst. 7:1618.1830. *F. campestris* Schauer, Nov. Act. Acad. Leop.-Carol. 19: Suppl. 1: 480. 1843. *F. Nicoletiana* Phil. var. *aspera* (Phil.) Reiche, Anal. Univ. Chile 90: 922. 1895. *F. peruviana* Schellenb. Bot. Jahrb. 50: Beibl. 111: 10. 1913?; cf. note below.

Shrubby, the nodose stems and thick revolute leaves beneath ashy-puberulent (Peruvian form); leaves ovate, blunt, roundish or

minutely cordate at base but generally so revolute that the form is concealed, characteristically about 5 mm. long, 2 mm. wide; sepals narrowly lanceolate, acute, to 4 mm. long or longer; style more or less trifid at apex.—The Peruvian plant seems to be the pubescent form, var. *aspera* (Phil.) Johnst. Contrib. Gray Herb. 85: 77. 1929, whose interpretation of the species as very variable I follow; however, cf. Ndz. key, l.c. 281, in which, without placing *F. peruviana* he maintains *F. aspera* Phil. with style lobes 1–1.5 mm. long and *F. campestris* Schauer and *F. chilensis* Presl with style lobes shorter than 1 mm. The latter he separates on a minute difference in size of calyx but especially in the absence of a ligule in the flower of *F. campestris*. This is a point best worked out in the field. *F. peruviana* was described with calyx to 8.5 mm. long, the petal claw appendaged. Flowers white according to Weberbauer, pink or pinkish fide Johnston, who describes the plants as forming low shrubby growths on dry plains near the sea or on adjacent hillsides, this observation corresponding to Weberbauer, 148. F.M. Negs. 35062; 35063.

Arequipa: Islay, *D'Orbigny*. Mejia (*Günther & Buchtien 167*, det. Bruns as *F. Nicoletiana* Phil. var. *aspera* (Phil.) Reiche). Mollendo, 300 meters, *Weberbauer 386* (type, *F. peruviana*).

FLACOURTIACEAE. Flacourtia Family

Reference: Gilg in Pflanzenfam. ed. 2. 21: 377–457. 1925.

Trees or shrubs with alternate stipulate leaves, the stipules often promptly caducous, the leaves often pellucid-dotted. Flowers dioecious or hermaphrodite, borne in axillary clusters, sometimes in panicles or otherwise disposed, the flower-parts 4–several, spirally or serially arranged. Stamens 8 to many, a disk usually more or less developed. Ovary generally superior, 1-celled or 2–several-celled by complete fusion of the 2–8 parietal placentae. Styles free or connate, sometimes simple. Fruit frequently capsular, sometimes more or less berry-like. Seeds often arillate, not infrequently pubescent. Endosperm if present usually starchy or oily.

Besides the above reference I acknowledge my indebtedness to the helpful work of Sleumer as published recently, particularly in Notizbl. Bot. Gart. Berlin as cited on occasion below.

Baehni in Candollea 5: 405–412. 1934 was constrained to suggest placing *Mollia*, *Nettoa* and *Trichospermum* in this relationship, genera generally included in the Tiliaceae. The chief character on which he based his conclusion was drawn from the ovary, this being

pluricellular in Tiliaceae and 1-celled in *Bixa, Mollia, Nettoa* and certain species of *Trichospermum.* Since it seems to us that most of the morphological characters oppose such a classification, the family Tiliaceae may after all be a homogeneous ensemble; however, to conserve the genera named in this family it is necessary to modify its character to read ovary 1–several-celled, or even partially divided, as Burret does.

The family (Tiliaceae) is variable then in this character just as is the Flacourtiaceae, so nearly related to it through the genera *Bixa* and *Cochlospermum.* But now one cannot more speak of the character of the placentation as a general character of the Malvales. As soon as one diminishes the importance of the established separation between Parietales and Centrospermae one perceives these interesting analogies. Thus the situation of genera such as *Mollia* and *Goethalsia* (see Baehni, Candollea 6: 44–45. 1935 and Record, Trop. Woods 42: 21. 1935) in this arrangement becomes clearer. The single technical character that forced some botanists to place these genera in the Parietales having lost its importance, one can, because of general characters undeniably important, leave them in the Tiliaceae, reinterpreted. Baehni's research was thought-provoking, showing, once again, among other things, that taxonomy can only approximately valuate the nuances in plant relationships; that, above all, for taxonomy to remain practical it must perforce remain often "unsatisfactory," so to speak, either failing in one direction or in another; the situation is usually complicated, too, by the personal viewpoint of the author. Considering the disposition of *Mollia* in this light I am leaving it in Tiliaceae.

Key (based on Gilg)

Sepals and petals dissimilar or spiraled and similar or the petals more numerous than sepals, not appendaged.

Styles 1; fruit wingless.

Anthers obovoid; albumen starchy.....2. *Bixa.*

Anthers oblong or linear; albumen starchy or oily.

Anthers laterally dehiscent; leaves simple.....4. *Lindackeria.*

Anthers opening by pores; leaves palmately lobed.
3. *Cochlospermum.*

Styles 3–7.....5. *Mayna.*

Sepals and petals similar, about the same number or the petals lacking.

Corona present; petals lacking; flowers yellow, in elongate terminal racemes; pubescence branched.....6. *Abatia.*

Corona lacking, sometimes also the petals.

Petals present.

Scandent shrub, each inflorescence with 1 sterile hooked peduncle.....1. *Ancistrothyrsus.*

Shrubs, but lacking modified peduncles.

Stamens indefinite in number, not in bundles.

Pubescence simple.

Anthers long-linear; flowers large in spike-like racemes. 7. *Neosprucea.*

Anthers small, roundish; flowers panicled or not in spike-like racemes.

Ovary at anthesis 3–5-celled; flowers in short racemes; stipules large.....8. *Prockia.*

Ovary 1–2-celled or falsely several celled by the intrusion of the placentae; stipules small. 9. *Banara.*

Pubescence stellate.....10. *Pineda.*

Stamens in bundles opposite the petals or solitary before each petal.....11. *Homalium.*

Petals none.

Leaves not lucid-punctate; stamens hypogynous.

Style extremely short, if obvious.....12. *Xylosma.*

Style elongate, divided.....13. *Ryania.*

Leaves usually not opaque, obviously lucid-punctate (usually); stamens more or less clearly perigynous.

Sepals in bud connected, finally 2–5 separating.14. *Lunania.*

Sepals at least at tips free.

Stamens same number as sepals.....15. *Tetrathylacium.*

Stamens more numerous than the sepals.

Stamens 6–12 alternating with staminodial appendages. 16. *Casearia.*

Stamens usually 10 or more and without appendages. 17. *Laetia.*

Artificial key

Scandent shrub, each inflorescence with 1 sterile hooked peduncle. 1. *Ancistrothyrsus.*

Shrubs, but the peduncles if present never modified.

Inflorescence notably branched, often paniculate.

Inflorescence candelabriform.....15. *Tetrathylacium.*

Inflorescence not so formed.

Flowers small, the parts similar.....9. *Banara.*

Flowers medium to large, the sepals and petals dissimilar.

Anthers obovoid; flowers medium in size.....2. *Bixa.*

Anthers narrow; flowers showy.....3. *Cochlospermum.*

Inflorescence little if at all branched or in any case very narrow (the large-flowered *Cochlospermum* might be sought here).

Flowers racemose or cymose, the inflorescence sometimes short, or the flowers solitary.

Racemes notably elongating, the flowers numerous.

Leaves opposite; racemes terminal, simple.....6. *Abatia.*

Leaves alternate; racemes often axillary, often with 1–2 branches; leaves 3-nerved.....14. *Lunania.*

Racemes or cymes rarely 1 dm. long, the flowers few or relatively few, or panicled, clustered or solitary, but then 5 mm. wide or wider.

Leaves markedly 3-nerved from base (3–5-nerved).

Anthers subglobose.

Flowers in terminal panicles or axillary fascicles. 9. *Banara.*

Flowers in racemes or only 1 or 2.....8. *Prockia.*

Anthers linear; flowers large, in pseudospikes. 7. *Neosprucea.*

Leaves not distinctly 3-nerved (cf. sometimes *Banara* with branched inflorescence).

Racemes often 1 dm. long; flowers medium size, normally 10 or more; leaves glabrous.....11. *Homalium.*

Racemes or inflorescence rarely 8 cm. long, the flowers 1–8; leaves usually puberulent.

Leaves ashy pubescent with branched hairs. 10. *Pineda.*

Leaves not so pubescent but trichomes stellate in *Ryania.*

Petals and sepals 3, persisting; stipules large. 8. *Prockia.*

Petals none or at least twice as many as the sepals; stipules small or caducous.

Petals none; sepals 4–5.

Anthers linear; flowers few, rather large. 13. *Ryania.*

Anther ovoid or short-oblong, tiny; flowers small.....17. *Laetia.*

Petals 4–12; sepals 2–3.

Style 1; fruit warty-echinate; leaves ample. 4. *Lindackeria.*

Styles 3–7; fruit prickly, soft appendaged or smooth.....5. *Mayna.*

Flowers in sessile or shortly pedicelled clusters, small or less than 5 mm. wide (rarely corymbose, *Laetia*).

Leaves not lucid-punctate; no appendages between stamens, these usually indefinite.....12. *Xylosma.*

Leaves usually lucid-punctate.

Flowers with staminodia; younger parts often pubescent, the leaves usually drying greenish.....13. *Casearia.*

Flowers without staminodia; Peruvian sp. mostly glabrous, the leaves net-veined, heavy, drying reddish-brown. 17. *Laetia.*

1. ANCISTROTHYRSUS Harms

Liana with alternate leaves and axillary often elongate peduncles trifid at apex, the middle branch modified into a sterile hooked holdfast. Flower pediceled, whitish. Receptacle obsolete. Sepals and petals 4, similar. Disk or corona extrastamineal, tubular, laciniate at margin. Stamens 8, lightly connate, the anthers small, narrowly oblong, versatile. Ovary shortly stipitate, 1-celled, with 4 placentae, the ovules 2–3 in each partition. Styles 4 with thick spreading stigmas.—Member of the *Paropsieae* according to the author, which group connects the family with the Passifloraceae. It is interesting to note the narrow 1-celled ovary.

Ancistrothyrsus Tessmannii Harms, Notizbl. Bot. Gart. Berlin 11: 147. 1931.

Younger parts puberulent or lightly pubescent becoming glabrate or glabrous; petioles about 1 cm. long; leaves rather elliptic-obovate or oblong, entire, mostly 10–15 cm. long, 5–8 cm. broad; peduncles 4–8 cm. long, the sterile one with hook 2.5–3 cm. long; fertile

peduncles bracteolate, the puberulent pedicels articulate, 1.5–2.5 cm. long; petals acuminate, 3–3.5 cm. long; corona pubescent, 8 mm. high; greenish filaments glabrous, with the dark orange anthers about 14 mm. long; young fruits densely hirsute, subglobose.—A beautiful plant, the showy white flowers campanulate (but divided to base). According to the discoverer the liana climbs to 3 dm., the stem sometimes thicker than 5 cm. Illustrated, l.c. opposite page 149.

Loreto: In flood-free wood, mouth of the Santiago, *Tessmann 4127; 4479.* Mishuyacu near Iquitos, *Klug 650.*

2. BIXA L.

Reference: Pilger in Pflanzenfam. ed. 2. 21: 313–315. 1925; Ducke, Arquivos Serv. Florestal 1: 36–37. 1939.

Tree-like shrubs or large trees with colored sap, broad, entire, alternate leaves and terminal panicles of rather large roseate or white flowers. Stipules promptly caducous. Sepals and petals 5, imbricate. Flowers bisexual. Stamens many, free or nearly so, the horseshoe-shaped anthers opening by apical slits. Ovary 1-celled with two parietal placentae. Fruit smooth to echinate, 2-valved, the obovoid seeds with an outer colored covering or pulp that dissolves in water.

The common and variable species *B. Orellana* L. is well known, at least in cultivation, in tropical and subtropical regions for the colored pulp that surrounds the seeds and which furnishes a color for foods such as rice, soups, and beverages, in which connection it is interesting to note that it has been found to be a source of vitamins D and A. It is known in commerce as annatto, which finds industrial application as a color for butter and butter substitutes. It was formerly employed as a dye for silk and wool. Among various Indian tribes it is used as body paint, and in civilized communities as lipstick.

The method of separation of the pulp from the seeds is by immersion in hot or cold water; after agitation the pulp settles and the water is gently poured off; the sediment, dried, is the product. This at one time was believed to have excellent diuretic properties; the leaves and the roots according to Pilger have been used as a digestant.

Pods ovoid-conical, often pointed, longer than wide, densely echinate or smooth..... *B. Orellana.*

Pods spherical or reniform or wider than long, pubescent and echinate or tuberculate.

Pods papillose or shortly and sparsely spinulose tuberculate, compressed ..... *B. platycarpa, B. arborea.*

Pods more or less densely echinate; little compressed, seeds red-brown.

Pods eglandular, the spines fine, numerous or few . . *B. Urucurana.*

Pods glandular and more or less echinate with fragile but coarse spines ..... *B. excelsa.*

Bixa excelsa Gleason & Krukoff, Phytologia 1: 107. 1934.

A tree with the spherical reniform pods of *B. Urucurana*, to 4.5 cm. wide, 3 cm. long, but reddish-brown glandular-tomentose and coarsely echinate at least below, the fragile but thick-based spines breaking off in age; seeds strongly flattened, the raphe costate.—Attains, according to Ducke, 10–30 meters in clay terrain above inundation. Has been distributed from region of Tapajos, Brazil, as *B. arborea* and *B. Orellana.*

Río Acre: Near Río Blanco (*Ducke*). Brazil. "Urucurana da matta."

Bixa Orellana L. Sp. Pl. 512. 1753. *B. odorata* R. & P. ex G. Don, Gen. Syst. 1: 295. 1831.

Shrub-like or low spreading tree with broadly ovate, acuminate leaves truncate or more or less cordate at base, usually somewhat pitted beneath; inflorescence scurfy pubescent; pods characteristically ovoid-pointed, longer than broad, densely long-echinate; seeds red (yellow), papillose, the endocarp detaching.—The forma **leiocarpa** (Kuntze) Macbr., comb. nov. (*Orellana americana* var. *leiocarpa* Kuntze, Rev. Gen. 1: 45. 1891), has the pods completely smooth. Small tree commonly cultivated in the montaña, but according to Ducke not persisting in Amazonia when an area is retaken by forest. According to Weberbauer, 252, found in Peru between 1,800–2,200 meters in bush-wood; according to Ruiz and Pavón, cultivated in the whole of Peru but apparently not found wild. A common escape in departments of Huánuco and Cuzco below 1,000 meters (Stork, Horton & Vargas). Illustrated, Mart. Fl. Bras. 13, pt. 1. *pl. 87.*

Lima: Callao, *Gaudichaud 125.*—Huánuco: Region Monzón, Weberbauer, 286. Cuchero, *Ruiz & Pavón.*—Junín: Huacapistana, *Weberbauer 2334;* 252. La Merced, *5275; 5274; 5342* (f. *leiocarpa*).—San Martín: Tarapoto, *Williams 5549; 7182; 7694* (f. *leiocarpa*). Vchiza, *Ruiz & Pavón.*—Loreto: Pebas, *Williams 1583.* Iquitos, *Tessmann 5069; Mexia 6435.* Balsapuerto, *Klug 3040.* Near Iquitos, *Williams 1462.* Caballo-Cocha, *Williams 2193.*—Cuzco:

Prov. Convenção, Santa Ana, Calca, Valle de Lares, Paucartambo (fide Herrera). Valle del Urubamba, 2,200 meters, *Herrera 3217*. Prov. Convenção, in abandoned cultivations, *Stork, Horton & Vargas 10475*. "Achiote," "achote," "sacha achiote," "achihuiti," "huantura," "urcu," "achite amarillo," "achiote colorado," "shambu," "shambu shambu," "shambu huayo," "shambu quiro." Warm regions.

Bixa platycarpa R. & P. ex G. Don, Gen. Syst. 1: 294. 1831.

Similar to *B. Orellana* and *B. Urucurana* with which it has been united but its pods are strongly flattened and merely roughened with scattered spinulose-tuberculate scabrosities; seeds papillose.—Attains, according to Ducke, 30 meters and grows in clay terrain that is above inundation. Another tree apparently similar and similar in habitat has been described as distinct: *B. arborea* Huber, Bol. Mus. Goeldi 6: 87. 1910, with regular reniform strongly compressed pods merely muricate in age, the seed blue with a narrow red zone, papillose only on upper end (Pilger). The Tessmann and Williams collections match the type perfectly. The natives use the seeds to dye various things and to color food as they do also with *B. Orellana* (Ruiz & Pavón). F.M. Neg. 13629.

Huánuco: Pozuzo, *Ruiz & Pavón*, type.—Loreto: Yurimaguas, *Williams 4615*. Río Yanayacu, Pampa del Sacramento (*Huber 1552*). Mouth of Río Napo (*Ducke* distr. *21, 279*). Yarina Cocha, *Tessmann 5434* (det. Pilger). Brazil. "Shambu-huayo," "max-pachin," "achote de monte."

Bixa Urucurana Willd. Enum. Hort. Berol. 565. 1809. *B. Orellana* L. var. *Urucurana* (Willd.) Kuntze ex Pilger, l.c. 315. *B. sphaerocarpa* Triana, Bull. Soc. Bot. Fr. 5: 369. 1858.

Like *B. Orellana* but pods spherical or flattened-spherical and smaller, densely to sparsely spiny, the seeds red-brown.—According to Ducke, habitant of marl terrain that may be flooded. Ducke, l.c. 37, apparently with reason, insists that this is a "good species"; Pilger, Notizbl. Bot. Gart. Berlin 11: 145. 1931, thought there were two species but apparently changed his mind when preparing the account for Pflanzenfamilien. Tree, 8 meters, native and planted for pulp surrounding the seeds, serving as paint for Indians and for coloring foods (Mexia). All the following were distributed as *B. Orellana*.

Junín: Wooded valley, La Merced, *Killip & Smith 23518*.—Loreto: Rancho Indiana, *Mexia 6435*. Caballo-Cocha, *Williams 2082*.

Middle Ucayali, *Tessmann 5472.* Leticia, *Williams 3063.*—Río Acre: *Krukoff 5394.* "Urucu-rana," "achiote blanco." Brazil; Venezuela.

3. COCHLOSPERMUM Kunth

Amoreuxia Moc. & Sessé ex DC. Prodr. 2: 638. 1825.

Reference: Pilger in Pflanzenfam. ed. 2. 21: 316–320. 1925.

Shrubs or trees with palmately lobed or divided leaves and few, loosely borne large yellow flowers. Stamens sometimes shorter on one side or rarely some shorter on both. Anthers narrow, opening at top or at top and bottom by pores or chinks. Style slender. Ovary 1-celled medially but with 3–5 lateral placentae or 3-celled. Seeds sometimes long-hairy.—Maintained by Engler (cf. Pilger, l.c. 316) as a family distinct from Bixaceae by the narrow anthers and by the oily endosperm. The name has been written *Cochliospermum* and *Cochleospermum;* it was conserved against *Maximilleanea* Mart. & Schrank to which name Kuntze transferred the species.

Leaves palmately 5–7-foliolate; anthers 2-pored.

Stamens on one side of flower shorter.

Sepals tomentose both sides.....*C. Williamsii.*

Sepals glabrescent.....*C. potentilloides.*

Stamens all the same length.....*C. orinocense.*

Leaves palmately parted; anthers 1-pored.....*C. vitifolium.*

Cochlospermum orinocense (HBK.) Steud. Nomencl. ed. 2, pt. 1: 393. 1840. *Bombax orinocense* HBK. Nov. Gen. & Sp. 5: 301. 1822.

A large tree with scarred branchlets, 7–5 digitate suborbicular leaves and terminal panicles of showy flowers; leaflets lanceolate, attenuate both ends, even petioled at base where somewhat unequal, entire, membranous, sparsely pubescent only on the nerves beneath; petioles elongate; calyx olive-green, puberulent-tomentulose, the broad sepals about 8 mm. long; petals broadly obovate, deeply emarginate or even bilobed, 4–4.5 cm. long; anthers about 3 mm. long, opening near tip by 2 short slits or pores; fruit not surely known.—At least according to Pilger's interpretation (probably correct) the following material is referable here; surely it is not *C. Parkeri* Planchon in Hook. Lond. Journ. Bot. 6: 310. 1847 under which name *Klug 3120* was distributed; that British Guiana species has extremely obtuse leaflets and secund flowers.

San Martín: Tarapoto, *Williams 6664*.—Loreto: Yurimaguas, *Poeppig 2473* (det. Szyszys.); *Tessmann 3768* and *Killip & Smith 28176* (det. Pilger). Mission de Sarayacu, *Castelnau*. Between Balsapuerto and Moyobamba on Río Cachiyacu, *Klug 3120*. Upper Itaya, *Williams 3485*. Lower Huallaga, *Williams 3991*. Near Iquitos, *Klug 1468*. Venezuela. "Huiña caspi," "quillo-sisa," "huimba."

Cochlospermum potentilloides (Pilger), comb. nov. *Amoreuxia potentilloides* Pilger, Notizbl. Bot. Gart. Berlin 13: 255. 1936.

Stems slender with a few short branchlets, 1.5 dm. long, shortly papillose toward the tips; leaves few (petioles 6–8 cm. long) orbiculate-reniform, 3–3.5 cm. long, deeply 7-parted, the middle divisions 2–2.5 cm. long, all obovate-cuneate, rounded at tip, serrate-dentate only above; stipules subulate; flowers few, borne laxly; sepals glabrescent, the younger sparsely pubescent, narrowly ovate, 15 mm. long; petals to 3.5 cm. long; longer stamens to 15 mm. long, the 2-pored anthers 3.5–4 mm. long.—Perhaps related to *A. colombiana* Sprague, Kew Bull. 104. 1922, with pubescent calyx, the seeds with a wide shallow sinus, the arrilode short-pubescent. *A. unipora* v. Tiegh. Journ. Bot. 14: 48. 1900, Bolivian and to be expected, has 3-lobed leaves and 1-pored anthers; interesting to note *C. tetrasporum* Hall. f., also Bolivian, with 4-pored anthers, 2 pores at each end.

Amazonas: Jacuanga and Bagua (*Raimondi 631*, type).

Cochlospermum vitifolium (Willd.) Spreng. Syst. 2: 596. 1825. *Bombax vitifolium* Willd. Enum. Hort. Berol. 720. 1809.

Smooth shrub or tree with long-petioled deeply 5-lobed leaves that are cordate at base, their lobes repandly serrulate or serrate, oblong-lanceolate, acuminate, nearly glabrous; flowers to 1 dm. broad; sepals puberulent both sides, about 15 mm. long; fruit 7–8 cm. long, softly puberulent the many reniform seeds covered with a cottony down.—Commonly planted in the West Indies; flowers when only 1 meter high (Standley). A common tree of the xerophytic forest of Cerro Viento about 35 miles east of Talara (Haught).

Piura: Negritos, *Haught 203*. North to Mexico.

Cochlospermum Williamsii Macbr. Candollea 5: 388. 1934.

Tree; petioles 1.5 cm. long and longer, glabrous and striate-angled; leaflets 6, entire, strongly unequal, the smaller about 6 cm. long, 4 cm. wide, the larger to 20 cm. long and nearly half as broad, all elliptic, cuneate to base, shortly acuminate, chartaceous-membranaceous,

glabrous and slightly lustrous above, opaque and shortly, sparsely pilose on nerves beneath, the 16 lateral nerves rather marked there; panicles densely reddish-tomentose with widely divaricate few-flowered branchlets; flowers 5 cm. long, expanded 7–8 cm.; pedicels 1 cm. long, fruiting nearly 2.5 cm. long; sepals brown-tomentose both sides, elliptic, the outer two a little shorter, about 17 mm. long; petals obovate, deeply bilobed, 5 cm. long, 3.5 cm. wide; stamens unequal, those on one side about 2 cm. long those on the other scarcely half as long, the anthers 3 mm. long, more or less curved and apically 2-pored; style 12 mm. long, villous at base; capsule young, truncate-depressed, deeply silky brown-tomentose. —Possibly it is a Bombax or of that affinity. However I allied it to *C. Wentii* Pulle of Surinam, a species with the sepals glabrous within. Described by the collector as a magnificent tree.

Loreto: Pebas on the Amazon, *Williams 1964*, type; also *1778*. Caballo-Cocha, *Williams 2090*.

4. LINDACKERIA Presl

Unarmed shrubs or trees with several- to many-flowered axillary racemes of medium-sized polygamous flowers. Sepals 3, the petals 6–12. Stamens sometimes in a column, the anthers narrow. Ovary 1-celled, warty.—Could well be treated as a section of the genus *Mayna*, the chief difference being in the way in which the flowers are borne. But *Mayna* in turn is essentially *Oncoba* Forsk. except that the latter is often thorny and the petioles little if at all thickened below the leaf blade as in this genus and in *Mayna;* the matter deserves study.

Lindackeria maynensis Poepp. & Endl. Nov. Gen. & Sp. 3: 63. *pl. 270*. 1845. *Oncoba maynensis* (Poepp. & Endl.) Eichler in Mart. Fl. Bras. 13, pt. 1: 441. 1871.

Smooth tree or shrub with ovate- or nearly oblong-elliptic more or less caudately acuminate leaves and medium-sized white or yellowish polygamo-monoecious flowers borne in short axillary racemes on the loosely spreading branchlets; younger nodes often glutinous; leaves usually a dm. or two long and less than half as wide, entire, opaque; racemes several- to 25-flowered, the lower male flowers short-the upper female long-pedicellate; flowers to 12 mm. wide; sepals oblong; filaments free, equaled by the narrow anthers; fruit globose, thickly warty tuberculate-echinate, brownish-yellow; seeds 2, rarely 3, lustrous.—*L. latifolia* Bth. and *L. pauciflora* Bth., both Amazonian, have respectively lanceolate and suborbicular sepals, the filaments

of the former united; the latter moreover has 9 petals and the racemes are only 2–4-flowered. Rarely to 12 meters high. F.M. Neg. 13617.

Loreto: Iquitos, *Tessmann 5385; Williams 8005; 3753; Killip & Smith 27316; 27083.* Mishuyacu, *Klug 765; 977; 804; 437.* Yarina Cocha, *Tessmann 5414; 5396; 5422.* Lower Río Nanay, *Williams 425.* Balsapuerto, *Klug 3037* (det. Standl.). Yurimaguas, *Klug 2816; Poeppig; Williams 4681; 4705.*—San Martín: Pongo de Cainarachi, *Klug 2661* (det. Standl.). Brazil. "Caracana," "huacapu," "huicho caspi," "lluicho caspi," "quinillia colorado."

5. MAYNA Aublet

Shrubs or small trees with entire or toothed leaves, deciduous stipules and fragrant flowers, the male in short axillary fascicles, the female solitary or few. Sepals 3, the longer petals 6–9. Stamens free, pubescent, the anthers linear. Ovary 1-celled, stiffly hairy, the styles 3. Fruit berrylike, dry, prickly.—The petioles are thickened below the leaf blade.—At least for the purposes of this work, here may be included *Carpotroche* Endl. which is in general similar but sepals 2–3, petals 4–12, styles 4–8 and fruit a large capsule or rather small, smooth or with 8–16 wing-like appendages borne from the base to the persistent short styles or the fruit merely lacerate-appendaged. In some species the flowers are polygamo-dioecious. One Brazilian species has smooth fruits. The appendages of the fruit if present are various; cf. illustrations, An. da Reun. S.-Amer. Bot. 3: 93–96. 1938.

Group is of special interest because at least one species, notably *C. brasiliensis* Endl., has been found to be a good source of Chaulmoogra oil.

Leaves glabrous or merely puberulent beneath.

Leaves ample, cuneate-obovate.

Petioles 1–2.5 cm. long; fruit aculeate, 15 mm. thick. *M. echinata.*

Petioles 4–6 cm. long; fruits large the wing-like appendages interspersed with lacerate ones. . . . . *M. longifolia.*

Leaves medium size; fruits to 2.5 cm. thick, only with soft triangular rarely cleft appendages. . . . . *M. parvifolia.*

Leaves densely soft-pilose beneath. . . . . *M. amazonica.*

Mayna amazonica (Mart.) Macbr., comb. nov. *Carpotroche amazonica* Mart. ex Eichler in Mart. Fl. Bras. 13, pt. 1: 437. 1871. *C. mollis* Macbr. Candollea 5: 390. 1934(?).

Small tree more or less densely and softly pilose even to the pedicels except the leaves above, these glabrous and somewhat lustrous between the nerves that are rather prominent beneath; petioles to about 2 cm. long; leaves chartaceous, remotely and minutely apiculate-dentate, elliptic to obovate, the base obtuse, the apex broadly acuminate, to 3 dm. long, 12 cm. wide; pedicels about 7 mm. long; male flowers few in short axillary racemes, 1–2 cm. broad, the white segments silky pilose without, 6 mm. long, or typically longer, the petals and sepals subequal.—The female and polygamous flowers are solitary or few in the axils. Fruits smooth.

Loreto: Mishuyacu near Iquitos, *Klug 1120* (type, *C. mollis*). Brazil; Colombia.

Mayna echinata Spruce, in herb. *Dendrostylis echinata* (Spruce) Benth. Journ. Linn. Soc. Bot. 5: App. 2: 82. 1861.

Shrub with lightly hirsutulous branchlets (toward the tip) petioles and pedicels, also somewhat puberulent; leaves oblong- or obscurely obovate-elliptic, 1–2 or even 3 dm. long, 4–9 cm. wide, cuneate at base, more or less abruptly caudate at tip, typically well-undulate, membranous or in age chartaceous, the veins becoming rather prominent beneath but fine; petioles 10–25 mm. long, slender; stipules subulate, 4–5 mm. long; petals about 7 mm. long (female flowers), the male smaller; fruit pubescent, about 15 mm. thick, sparsely to densely aculeate, the triangular-based aculei about 3 mm. long.—As remarked by Eichler, l.c. 444 and by Gilg, l.c. 404, this is possibly better treated as a variety of *M. odorata* Aubl., which, however, appears, at least typically, to have much thicker leaves with coarse venation, a denser almost tomentulose puberulence on the branchlets, and stiffer narrower prickles on the glabrate fruits; there may of course be intermediate forms. F.M. Neg. 24100.

San Martín: Tarapoto, *Spruce 4499*, type; *Williams 6552; 6557; 6531; 5822*.—Junín: Río Perené, *Killip & Smith 25105*. Puerto Bermúdez, *Killip & Smith 6677*.—Loreto: Balsapuerto, *Killip & Smith 28590*. Mishuyacu near Iquitos, *Klug 866; Mexia 6398* (det. A. C. Sm.). Puerto Arturo, *Williams 5021; 5206; 5328*. Río Itaya, *Williams 235*. Pongo de Manseriche, *Tessmann 4583*. Pongo de Cainarachi, *Klug 2758* (det. Standl.).—Río Acre: *Krukoff 5693*. Amazonian region. "Shamshu huayo," "congo caspi," "sapote yacu."

Mayna longifolia Poepp. & Endl. Nov. Gen. & Sp. 3: 64. *pl. 271*. 1845.

Carpotroche longifolia (Poepp. & Endl.) Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 82. 1861.

Shrub or tree with shortly rusty-tomentulose branchlets; petioles 4–6 cm. long, markedly articulated below the leaf-blade, this 3–4 or even 6 dm. long, 1–2 dm. wide, obovate-oblong, long-attenuate at base, shortly caudate acuminate, remotely sinuate, somewhat pubescent on both sides but soon glabrate above, chartaceous; stipules 6–10 mm. long; flowers dioecious, the male 10–12, the female 15–16 mm. wide (Eichler), both sorts fascicled on the trunks; sepals 2; petals 6–7 (9–10); capsules woody, to 6 cm. long, 4 cm. thick, the soft wings with many soft lacerated crests between them; seeds irregularly shaped, obtusely angled, about 6 cm. thick, 10 mm. long. —The flowers, according to Poeppig, are odorless. The leaves simulate those of *Clavija* sp. The white fruit, turning green, is borne on stubs from the main trunk (Mexia). The "pulp" of the seeds is edible, the name "Huira guayo" meaning "lard fruit" (Klug). *C. amazonica* Mart. and *C. grandiflora* Spruce have the male flowers in short racemes; the petals and sepals of the former are subequal, the flowers less than 2.5 cm. broad; in the latter the petals are longer and the flowers attain a diameter of 4 cm. The fruit of the former is a dehiscent gray-tomentose capsule to 6.5 cm. long, 5.8 cm. wide, with 5 stout and 5 very weak protuberances; that of the latter is a capsule that opens apically star-like and that was described by Eichler as being the fruit of the former (Ducke). There are also *C. integrifolia* Kuhlm. the leaves really entire, the flowers small, and *C. crispidentata* Ducke, Archiv. Inst. Biol. Veg. Rio Jan. 4: 55. 1938, with the fruit of *M. longifolia* but green, long-peduncled and densely armed with small soft crisped appendages; the male form of this simulates *C. brasiliensis*. Another Amazonian species that may occur is *C. apterocarpa* Kuhlm. Archiv. Inst. Biol. Veg. Río Jan. 2: 87. *pl. 5.* 1935, the fruits wingless; east to Río Tapajoz on non-inundated lands (Ducke).

San Martín: Tarapoto, *Spruce 4255.*—Junín: 400 meters, Puerto Jessup, *Killip & Smith 26256;* and Puerto Bermúdez, *26491; 26675.*—Loreto: Mouth of Río Santiago, *Mexia 6131* (det. A.C.Sm.). Caballo-Cocha, *Williams 2131.* La Victoria, *Williams 2711.* Soledad, *Tessmann.* Pebas, *Williams 1801.* Lower Río Nanay, *Williams 625.* Balsapuerto, *Killip & Smith 28551.* Iquitos, *Williams 8017.* Mishuyacu, *Klug 1124; 259; 12; 97; 1121; 4; Killip & Smith 29864.* Cerro de Conchohuayu (*Huber 1379*). Brazil. "Huira huara," "huira guayo," "zapoto del mono."

Mayna parvifolia (Macbr.) Sleumer, Repert. Sp. Nov. 45: 12. 1938. *Carpotroche parvifolia* Macbr. Candollea 5: 390. 1934.

Completely glabrous shrub or perhaps tree; branchlets slender, pale, flexuous; petioles 5–10 mm. long, grooved above; leaves elliptic or oblong-elliptic, shortly acute at base, abruptly acuminate, 10–12 cm. long, 4–4.5 cm. wide, often smaller, membranous and rather densely lineate-punctate-lucid, pale green and slightly lustrous both sides; lateral nerves 4–5, moderately prominent with the reticulate veins beneath; fruiting pedicels thick, nearly 1 cm. long; capsule globose to 2.5 cm. thick, densely covered with triangular-subulate puberulent soft crests 5 mm. long.—Otherwise unknown.

Loreto: Puerto Arturo, Yurimaguas, *Williams 5260.* "Casha huayo."

6. ABATIA Ruiz & Pavón

Myriotriche Turcz. Bull. Soc. Nat. Mosc. 36: 554. 1863.

Slender shrubs with opposite estipular leaves and long racemes of medium-sized yellow flowers. Petals none, the short-tubular calyx with 4–5 teeth, the base persisting about the globose dehiscing capsule. Stamens many, the slender filaments with filiform appendages, the anthers short. Ovary 1-celled, or partly 2-celled, with 1 slender style. Seeds minute, dorsally winged or keeled.—Named for Don Pedro Abat, professor of botany at Seville.

Calyx subsessile, even in fruit, 1–2.5 mm. long.....*A. boliviana.*

Calyx well-pedicellate, somewhat to much longer.

Pedicels (in flower) and sepals 2–5 (7) mm. long with gray-fulvous trichomes.

Pubescence stellate-tomentulose.....*A. parviflora.*

Pubescence pilose.....*A. canescens.*

Pedicels and sepals soon 7–10 mm. long or longer, the pubescence rather brown.

Pedicels geniculate well below the middle, to 1 cm. long in fruit. *A. rugosa.*

Pedicels geniculate slightly below the middle, 2 cm. long in fruit.....*A. spicata.*

Abatia boliviana (Mandon & Wedd.) Britton, Bull. Torrey Club 17: 214. 1890. *Graniera boliviana* Mandon & Wedd. ex Benth. & Hook. f. Gen. Pl. 1: 799. 1867; name.

Straggling or loosely slender-branched shrub; petioles 2–5 mm. long; leaves ovate-lanceolate, minutely cordate at base, acuminate,

finely denticulate, ashy scurfy-stellate beneath but soon glabrate, especially above; racemes with peduncle only about 7 cm. long, often shorter, densely flowered at least above, spike-like; rachis densely stellate-tomentose; calyx lobes puberulent without, triangular-acute; fertile stamens few; capsule globose, stellate puberulent, the seeds puncticulate. F.M. Neg. 24096.

Puno: 2,700 meters, Cuyocuyo, Sandía, *Weberbauer 876;* 237. Bolivia.

Abatia canescens Sleumer, Notizbl. Bot. Gart. Berlin 11: 951. 1934.

About 2 meters high, lightly ashy pilose except the style and the leaves above where scarcely so, beneath more densely, especially on the nerves; leaves opposite, oblong-obovate or oblong, narrowed to the 1 cm. long petiole, often minutely acuminate, denticulate, membranous, 7–9 cm. long, 3–4 cm. wide; racemes terminal, 16–18 cm. long with often some lateral ones from the axils of the younger leaves; bracts acuminate, 3–5 mm. long, about as long as the pedicels; sepals 4, ovate-lanceolate, 3–4 mm. long; stamens about 35; ovary densely pilose, attenuate to the glabrous style.

Lambayeque: 1,500 meters, Olmos (*Weberbauer 7099*, type).

Abatia parviflora R. & P. Syst. 1: 136. 1798. *A. verbascifolia* HBK. Nov. Gen. & Sp. 5: 358. *pl. 486*. 1823?

Gray stellate-tomentulose, especially the young striate-angled branchlets and the younger leaves beneath these more or less densely soft-pilose above with 2–3-parted trichomes, oblong-elliptic, acute at base, very shortly acuminate, the 10–12 lateral nerves with the veins reticulate and prominent only beneath, in age sparsely stellate-pubescent beneath and subcoriaceous, to about 10 cm. long, 5 cm. wide; petioles to 1.5 cm. long; racemes to 2 dm. long; pedicels 3 mm. long or the lower even 6–9 mm. long, these remote; sepals glabrous within, ovate, acute, 2–5 mm. long; stamens about 20; ovary globose, the style glabrous.—The Colombian plant of HBK. may be distinct from the Peruvian, at least varietally, which here is described from the typical form from Muña. F.M. Neg. 34907.

Huánuco: Muña, *Ruiz & Pavón*, type; *4300; 2075*. Above Mito, flowers bright or lemon yellow, *1594* (det. Sleumer). Pampayacu, *Kanehira* 74 (det. Sleumer). Yanano, *4926*. Ecuador. "Taucca-taucca."

Abatia rugosa R. & P. Syst. 1: 136. 1798.

Branches gray-brown, nearly smooth; branchlets compressed at the nodes, compactly stellate-tomentose; petioles 1–1.5 cm. long; leaves densely floccose stellate-tomentose beneath, sparsely so or soon glabrate above, thick-chartaceous, closely denticulate, oblong-elliptic, unequally and slightly cordate, minutely acuminate, the older 12 cm. long, 4 cm. wide or larger, the upper smaller; nerves and veins conspicuously impressed-reticulate above, beneath concealed by the pubescence; racemes floriferous nearly to base, about 2 dm. long; pedicels and sepals yellow stellate-pubescent, the former 8–10 mm. long, geniculate 2–3 mm. above the base, the latter narrowly ovate, acuminate, about 6 mm. long; glabrous within; stamens about 25 or 30; capsule included in the calyx, globose with acute tip, the seeds wing-keeled. F.M. Neg. 24097.

Huánuco: Rondos, Pillao and Nauyen, *Ruiz & Pavón*, type. Above Huánuco (near Pillao), 3,000 meters, *2075*. Chinchapalca, *1594*. Chaglla, *Weberbauer 6694*. Below Cerro de Pasco, *Sawada P92*. "Yoriturpi," "galgaretama," "tauhac tauhac," "retamo cimmarona," "taucca-taucca."

Abatia spicata (Turcz.) Sleumer, Repert. Sp. Nov. 45: 13. 1938. *Abatia macrostachya* Killip, Journ. Wash. Acad. Sci. 24: 50. 1934. *Myriotriche spicata* Turcz. Bull. Soc. Nat. Mosc. 36: 555. 1863.

Densely stellate-tomentose throughout except the sepals within and the style, the ovate, auriculate-based leaves sparsely so above; racemes lax, the slender pedicels divaricate, 1.5–2 cm. long, geniculate near the middle; sepals narrowly lanceolate, 7–8 mm. long, attenuate to the subulate tip; fertile stamens about 35.—The racemes may attain 2.5 dm. but it is not clear to me that the plant is distinct from *A. rugosa* because there appear to be intermediate collections; for example, *Weberbauer 4986*, also from Cuzco region, has pedicels even of old lower flowers barely 10 mm. long yet the geniculation is about at the middle. On the other hand it is true that the pedicels of typical *A. rugosa* from central Peru are geniculate well below the middle. Under these circumstances more material will be necessary to decide the matter. The type is by Mathews from Andinamarca (not seen).

Cuzco: Yanamanchi to Amaibamba (*Cook & Gilbert 1136*, type, *A. macrostachya*); Valle de San Miguel, *Herrera 2015* (det. Sleumer). Urubamba Valley, *Herrera 1568* (det. Killip). Convención, *Weberbauer 4986* (det. Sleumer).—Apurímac: 2,900 meters, *Weberbauer 5838*.—Huancavelica: Forest edge, 2,900 meters, Ampurco, *Stork &*

Horton 10419.—Without locality, misit Mathews, *Gaudichaud 1204.* "Escobilla."

7. NEOSPRUCEA Sleumer

Spruceanthus Sleumer, Notizbl. Bot. Gart. Berlin 13: 362. 1936, not Verdoorn, 1934.

Shrub or small tree with elliptic-oblong 3-nerved leaves and spike-like racemes of rather long flowers. Leaves 3-nerved from the biglandular base. Stipules minute, caducous. Sepals and petals 4, persisting at base of the dry fruit. Anthers long-linear, the short filaments filiform. Ovary 1-celled or semi-5–6-celled by the prominent placentae. Genus name a highly just compliment to the great English botanist Spruce.

Neosprucea grandiflora (Spruce) Sleumer, l.c. 14: 47. 1938. *Banara grandiflora* Spruce ex Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 93. 1861. *Hasseltia grandiflora* (Spruce) Sleumer, l.c. 11: 960. 1933. *Spruceanthus grandiflorus* Sleumer, l.c. 13: 363. 1936.

Petioles about 1 cm. long; leaves broadly cuneate or subrounded at base, acuminate, chartaceous, 13–25 cm. long, 5–6 (–9) cm. wide, remotely and obtusely toothed or subentire; flowers white; rachis, pedicels (2 mm. long), sepals and petals tomentose, the latter 8–10 mm. long, 3.5 mm. wide; sepals ovate, 4–6 mm. wide, 6–7 mm. long; anthers 8–10 mm. long, the filaments 2 mm. long. F.M. Negs. 24085; 34873.

San Martín: In rocks along streams, Tarapoto, *Spruce 4897*, type.—Loreto: Pampas de Ponasa, 1,200 meters, *Ule 6712.* Colombia; Brazil.

8. PROCKIA P. Br.

Shrubs or small trees with pinnately nerved toothed leaves, mostly persistent conspicuous stipules and few-flowered usually terminal racemes of rather large blossoms. Sepals and petals similar, 3, rarely 4, persisting. Stamens many, free, the anthers small. Ovary completely 3–5-celled, the style simple. Capsules not dehiscing, the small seeds angled and in a white pulp.—The leaf-teeth are gland-tipped as are the leaves at the base. This was included at one time as *Hasseltia* in the Tiliaceae because of the multicellular ovary; cf. remarks above at beginning of family.

Prockia Crucis L. Sp. Pl. ed. 2. 745. 1762.

Grayish-villous, especially the young leaves and branchlets; leaves rather unequally cordate-ovate, characteristically thin but

varying considerably in size and coarseness of serration, 3–5 (more or less distinctly) -plinerved, acuminate; corymbs few (–12, Eichler) -flowered; pedicels about 1 cm. long, usually ebracteolate; sepals ovate-cordate, about 6 mm. long; capsule somewhat depressed-globose, hirsutulous.—The upper stipules, arcuate-lanceolate, dentate, are a prominent feature of this shrub or small tree. Our common form is the var. *septemnervia* (Spreng.) Sleumer, Notizbl. Bot. Gart. Berlin 14: 47. 1938, the leaves rather obviously 7-nerved, the pedicels sometimes bracteolate. Illustrated, Moric. Pl. Nouv. Amer. *pl. 97;* Hook. Icon. *pl. 94.*

San Martín: Tarapoto, *Williams 5818.* Juanjuí, *Klug 3829; 3865.*—Amazonas: Chachapoyas, *Mathews.*—Huánuco: Huallaga, 1,600 meters, *Weberbauer 6817; Mexia 8314* (det. Standl.). Pozuzo, *Ruiz & Pavón* (det. Sleumer as the sp.).—Junín: La Merced, 1,000 meters, *Weberbauer 1940; Isern 2123; Schunke 336.*—Loreto: Yurimaguas, *Williams 4727; 5048; 5220; 4285; Killip & Smith 28070.* Santa Rosa, *Killip & Smith 28806.*—Río Acre: *Ule 9364* (the sp.). Brazil to Argentina. "Charapilla."

9. **BANARA** Aublet

Hasseltia HBK. Nov. Gen. & Sp. 7: 231. *pl. 651.* 1825. *Hasseltiopsis* Sleumer, Notizbl. Bot. Gart. Berlin 14: 46, 49. 1938.

Trees or tree-like shrubs frequently with gland-toothed pinnately nerved leaves, or these more or less distinctly 3–5-nerved, minute or small caducous stipules and usually many rather small flowers borne in terminal or axillary cymes, panicles or compound umbels. Sepals and petals similar, 3, or rather less frequently 4–6, in the former case always persisting, in the latter in some species falling from the base of the young fruit. Stamens many, free, the anthers minute. Ovary 1-celled at anthesis, the placentae more or less intruded or rarely 2-celled by their complete union. Capsule indehiscent or tardily and irregularly dehiscent, often berry-like, sometimes hard and apiculate by the persistent style, the seeds 1-several.

The genus *Hasseltiopsis* recently has been proposed by Sleumer to care for certain species with the ovary-placentae (3–5) little intruded, the flower parts falling from the young fruits, the leaves 3-nerved from base. Unfortunately he has selected as type of his group *Banara dioica* Benth. Journ. Linn. Soc. 5: Suppl. 2: 94. 1861, which, as is evident from examination of cotype material of the two collections cited by Bentham, is a *Banara;* at least its sepals are persistent about the mature capsules. Therefore it seems that a

new name must be given to include the species actually conforming to Sleumer's diagnosis. As I had long questioned the distinctness of *Hasseltia* HBK. which Sleumer's exacting research proves conclusively is only a *Banara* with ovary with 2 placentae that ultimately are connate (but I would record that I had retained the genus even as *Hasseltiopsis* at first, to avoid transferring names) I now prefer to follow my belief, and the more simple course, letting *Banara* include these units rather than give a name to a segregate which seems evidently to be artificial. Equivalent differences are to be found within generic lines in many families, as in Lobeliaceae and in *Carica*, to mention only two. And in the related Melastomaceae the number of ovary cells may vary even in the same species. Certainly the characters defining the groups may be said to be variable or to represent merely degrees in a common development. However, compare Sleumer, l.c. 46, for a careful and illuminating analysis of them upon which I have drawn. I follow his most useful work in leaving *Prockia* and *Pineda* conveniently marked entities and *Neosprucea* Sleumer, at least as far as this group is concerned, as outstanding.

Leaves 3-nerved from base.

Sepals lanceolate, promptly reflexing and with petals persisting; leaves usually subentire, acute at base.....*B. laxiflora.*

Sepals ovate, spreading or tardily reflexing; leaves more or less dentate and rounded at base.

Sepals 2–2.5 mm. long; lower panicle branches to 2 cm. long. *B. glabrata.*

Sepals 3–4 mm. long; lower panicle branches elongate. *B. leucothyrsa.*

Leaves pinnately nerved even from the base (Peruvian species).

Leaves subsessile, typically soft-pilose beneath even at maturity, closely serrate.....*B. mollis.*

Leaves markedly petioled at least if pubescent, usually glabrous or glabrate beneath, subentire or somewhat toothed.

Petioles rarely 5 mm. long, mostly shorter.....*B. guianensis.*

Petioles (6) 8–12 mm. long.

Leaves ovate-elliptic-oblong, fully twice as long as broad.

Leaves opaque, regularly toothed, or subentire. *B. amazonica.*

Leaves lustrous, the teeth unequally remote.....*B. nitida.*

Leaves ovate-oval, scarcely twice longer than broad.
B. Tessmannii.

Banara amazonica Sleumer, Notizbl. Bot. Gart. Berlin 12: 50. 1934.

Bark yellowish-brown the lenticels small; petioles minutely pubescent or glabrate, 10–12 mm. long, the binate glands at the base of the leaf, this subrotund or narrowed at the base, broadly acuminate, chartaceous, glabrous, opaque both sides, 8.5–11 cm. long, 3.5–5 cm. wide, the regularly placed teeth obtuse, scarcely 0.5 mm. high, nearly glabrous or the prominent midnerve obscurely pilose beneath; panicles axillary and terminal, many-flowered, 8–13 cm. long, the lower branches to 8 cm. long; pedicels glabrous, the bractlets puberulent; sepals ovate, acute, puberulent without, 4–4.5 mm. long, subequaling the yellow rotund-ovate petals; ovary glabrous, the fruit lustrous.—Tree 40 meters high or higher (Mexia); medium-sized tree with trunk 25 cm. in diameter (Tessmann). F.M. Neg. 28938.

Loreto: Yarina Cocho, 155 meters, *Tessmann 3219*, type. Rancho Indiana, left bank Marañón, *Mexia 6404* (distr. as *B. laxiflora*). Bolivia. "Teareo."

Banara glabrata Sleumer, Notizbl. Bot. Gart. Berlin 11: 952. 1934.

Branchlets glabrous, the lenticels round; petioles pubescent, 8–10 mm. long; leaves rounded or narrowed at base, acuminate, subcoriaceous, subentire or most minutely and remotely denticulate, 10–12 cm. long, 4.5–6 cm. wide; prominent 3 (–5) nerves beneath a little pubescent toward base of leaf, the binate glands obvious; panicles axillary and terminal, many-flowered, yellowish-tomentulose, 4–7 cm. long, the lower branchlet 1.5–2 cm. long, the pedicels about 1 mm. long; sepals ovate, acuminate, 2 mm. long; petals green, rounded, tomentulose, slightly longer; ovary glabrous.—Tree in flood-free wood. F.M. Neg. 28941.

Loreto: Puerto Melendez below the Pongo de Manseriche (*Tessmann 3916*, type).—Río Acre: *Krukoff 5770*.

Banara guianensis Aublet, Pl. Guian. 1: 548. *pl. 217*. 1775.

Low shrub or tree with oblong, regularly glandular-serrate leaves and gray-puberulent panicles of small yellow flowers; petioles short with 1 or 2 cupulate glands at the tip or at base of the leaf, this rounded or subcordate, the tip shortly acuminate; leaves somewhat pilose on the nerves beneath, chartaceous, usually about 8–12 cm.

long, 4–6 cm. wide; pedicels 3–5 mm. long; ovary glabrous, the 5–8 placentae lamelliform; fruit to 8 mm. in diameter, pulpy within, the black seeds sulcate-ribbed.—Sometimes 15–30 meters (Tessmann); a 7 meter tree or taller used for firewood and posts (Mexia).

There are often one or two glands placed irregularly near the junction of the petiole and leaf-blade; sometimes the glands are regularly opposite each other at the tip of the petiole and this variation seems to be associated with somewhat smaller leaves so that designation seems to be called for: var. **isadena** Standley, var. nov. in herb. foliis plerumque oblongo-ellipticis, 6–8 cm. longis, circa 3 cm. latis, petiolo apice regulariter biglanduloso.—Florida, *Klug 2246*, type; *2358*.

Huánuco: Region Churubamba, 1,100 meters, *Mexia 8159* (det. Standl.).—Junín: Puerto Yessup, *Killip & Smith 26303; 26436* (det. Standl.).—San Martín: Juanjuí, 400 meters, *Klug 3908*.—Loreto: Lower Río Huallaga, *Williams 4978*. Mouth of Santiago, *Tessmann 4508; 3976*. Fundo Indiana, *Mexia 6387* (toward the var.). Yurimaguas, *Williams 5321; 5365; 4014*. Costa Rica to Brazil and Guiana. "Raya caspi," "machu-mangua," "linque," "oco cireyda," "machinmangua."

Banara laxiflora Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 91. 1861. *Hasseltia laxiflora* (Benth.) Eichler in Mart. Fl. Bras. 13, pt. 1: 502. 1871. *H. peruviana* Pilger, Verh. Bot. Ver. Brandenb. 47: 160. 1905.

A tree or shrub with slender branchlets, typically glabrous but usually the younger parts and the leaves, especially on the nerves beneath, somewhat pubescent; petioles 7–10 mm. long; leaves elliptic-oblong, lightly sinuate-dentate or subentire, acute at base, acuminate, usually 1–2 dm. long, 4–7 cm. wide, with 2 glands at the base, lustrous, chartaceous-coriaceous; panicle lax, the branches 1–4 times divaricately divided, often about 1 dm. long and even as wide, sometimes much smaller; sepals barely 2 mm. long, lanceolate, slightly tomentulose, exceeded by the stamens, these about 30, equaled by the petals; ovary glabrous, slightly attenuate at base; placentae 2–3, completely connate below the middle (Benth.).—*H. peruviana* seems to be the typical form. *H. floribunda* HBK., found as near as Ecuador, has coarsely dentate leaves, the inflorescence densely flowered. Illustrated, Mart. Fl. Bras. 12, pt. 3. *pl. 34*. F.M. Negs. 13649; 13650.

San Martín: Pongo de Cainarachi, *Ule 6416*, type *H. peruviana*. Frequent on the banks of the Marañón and Pastasa, *Spruce 4964*,

type.—Junín: Vitoc, *Ruiz & Pavón* (det. Sl. & Mansf.).—Loreto: Puerto Arturo, *Killip & Smith 27894*. Soledad, *Tessmann 5226*. Mouth of Santiago, *Tessmann 4306; 3420*. Yurimaguas, *Williams 4976; 4556; 4611; 5196; 5028; 4292; 4293*. Mishuyacu, *Klug 1462*. La Victoria, *Williams 2945; 2937; 2779*. Lower Río Nanay, *Williams 479; 588; 632*. Río Monzón, *Williams 8176*. Lower Río Huallaga, *Killip & Smith 29264?* (10 meter tree, leaves 3.5 cm. wide). Balsapuerto, *Klug 2992; 3234* (det. Standl.).—Río Acre: *Krukoff 5770; 5395*. "Tamamaru," "tama-nara," "okuchi-uasi," "okuchi huasi," "ratan-caspi."

Banara leucothyrsa (Sleumer), comb. nov. *Hasseltiopsis leucothyrsa* Sleumer, Notizbl. Bot. Gart. Berlin 14: 51. 1938.

Tree, glabrous except for the petioles, gray-tomentulose sepals, petals and ovary; petioles 1–2.5 cm. long; leaves broadly oblong-elliptic to elliptic, more or less rounded at base, where biglandular, and caudate at tip, 7–14 cm. long, 4–7 cm. wide, subcoriaceous, lustrous both sides but paler beneath, remotely crenately glandular-serrate; basal nerves 3; panicles 9–12 cm. long, the lower branches to 8.5 cm. long, the rachis and pedicels rather stout, rigid; sepals and petals 4–6, 3.5–4 mm. long, ovate-oblong, subacuminate, falling from the fruit, slightly longer than the stamens; ovules many; seeds unknown.—The author apparently rightly has distinguished this tree from *B. dioica* Benth. (*Hasseltia dioica* Sleumer, l.c. 12: 55. 1934); it is rather similar to *B. mexicana* Gray, with narrower leaves cuneate at base and longer stamens. He further separates a Colombian form (*Hasseltiopsis albomicans* Sleumer, l.c. 51) with nearly twice as large panicles.

Loreto: In flood-free wood below Puerto Melendez, *Tessmann 4802*, type. Pongo de Manseriche, *Tessmann 4835*. Mouth of Santiago, *Tessmann 3976; 4472*.

Banara mollis (Poepp. & Endl.) Tul. Ann. Sci. Nat. sér. 3. 7: 290. 1847. *Kuhlia mollis* Poepp. & Endl. Nov. Gen. & Sp. 3: 74. *pl. 285*. 1845. *B. Tulasnei* Macbr. Candollea 5: 389. 1934, probably. *B. guianensis* Aublet, var. *mollis* (Poepp. & Endl.) Eichler in Mart. Fl. Bras. 13, pt. 1: 501. 1871.

Shrub or small tree with many spreading branches, the lax rusty-pilose branchlets terminated by often long and narrow panicles of small flowers; leaves subsessile, usually oblong, with a rounded base, this bicupulate-glandular, and a short acumination, regularly and prominently glandular-serrulate, to 2 dm. long or longer and 5 cm.

or so wide, or the upper smaller, glabrate above but usually at least on the pinnate nerves softly sericeous-pilose beneath; sepals ovate, acutish, subglabrous within, 2 mm. long, the rounded petals a little shorter; ovary glabrous; fruit ellipsoid, apiculate, pulpy within.—Perhaps better treated as a variety of *B. guianensis*, following Eichler. Eichler designated *Spruce 4894* as a small-flowered form but this number as seen by me is only in bud. F.M. Negs. 18229; 24088; 24089.

San Martín: San Roque, *Williams 7031*. Tarapoto, *Spruce 4894; Ule 6589* (det. Pilger). Pongo de Cainarache, *Klug 2680* (det. Standl.).—Huánuco: Cochero, *Poeppig*, type; *Dombey; Ruiz & Pavón*. Huallaga, *Weberbauer 6818*. Chinchao, *Ruiz & Pavón*.—Junín: La Merced, *5261; 5717*. Chanchamayo, *Weberbauer 1832*. Pichis Trail, *Killip & Smith 25718* (var.? petioles longer). Near Moyobamba, *Weberbauer 4518; Klug 3301* (det. Standl.). Cerro de Canchahuayo (*Huber 1467*).—Cuzco: *Gay*. Brazil; Colombia? "Borracho sisa," "galgaretama."

Banara nitida Spruce ex Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 93. 1861.

Glabrate or in age glabrous; petioles 6–10 mm. long, minutely strigillose, grooved above, often with one cupulate gland on the junction to the leaf-blade, this ovate-oblong, inequilateral at the narrowed base, well-acuminated, coarsely but remotely crenate, chartaceous-coriaceous, lustrous above, to 2 dm. long, 7 cm. wide, mostly smaller; sepals ovate, acute, about 3 mm. long, the broader petals a little longer; panicle puberulent in age, about 12 cm. long, the lowest branches 6 cm. long, widely divaricate, the fruiting pedicels to 7 mm. long; capsules ellipsoid, indehiscent, apiculate, the few seeds faintly lineate.—*B. regia* Sandw. Kew Bull. 154. 1930 (*B. magnifolia* Sleumer, Notizbl. Bot. Gart. Berlin 11: 952. 1934), from Ecuador, has leaves 3–5 dm. long, the teeth even 2.5 mm. high. F.M. Neg. 24090.

San Martín: Tarapoto, *Spruce 4512*, type; *Williams 6530; 6986*.—Loreto: Pró on the Amazon, *Williams 1965a*.

Banara Tessmannii Sleumer, Notizbl. Bot. Gart. Berlin 14: 48. 1938.

Tree-like shrub with smooth sparsely lenticellate branches; petioles 10–12 mm. long, ashy-pilose; leaves ovate or rarely oblong-ovate, rounded at base, sometimes more or less inequilaterally, broadly attenuate at tip but obtuse, chartaceous, glabrous except the

puberulent pilose nerves, regularly sinuate, glandular-denticulate, 9–12 cm. long, 5–7 cm. wide; panicles terminal, lax, about 15-flowered, and 6 cm. long, gray-pubescent; pedicels slender, about 1 cm. long; sepals broadly deltoid, obtuse, 3.5 mm. long, the pale green petals slightly smaller.—In flooded area.

Loreto: Upper Ucayali, edge of Lake Mosote, *Tessmann 3359*, type.

10. PINEDA R. & P.

Christannia Presl, Rel. Haenk. 2: 91. *pl. 67*. 1835.

Shrub with alternate entire blunt oblongish leaves, these ashy-green by reason of the felty covering of branched trichomes. Flowers rather large, long-pediceled, the persisting sepals and petals usually 5. Stamens many, the anthers small. Ovary 1-celled, the placentae thick. Style short, thick, crowning the dehiscing 2–7-seeded capsule.

Pineda incana R. & P. Prodr. 76. *pl. 14*. 1794. *Christannia salicifolia* Presl, Rel. Haenk. 2: 91. *pl. 67*. 1835. *Banara incana* (R. & P.) Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 94. 1861, and var. *Jamesonii* Benth. l.c. *P. Lehmannii* Hieron. Bot. Jahrb. 20: Beibl. 49: 58. 1895, fide Sleumer.

Low shrub often many-stemmed, with short petioled oblongish subentire to distinctly toothed more or less white stellate-pubescent leaves or these beneath in age only arenose between the veins, usually about 2.5 (–3.5) cm. long; flowers few in short corymbiform racemes, the pedicels bracteolate, 6–12 mm. long, yellow fading reddish; sepals oblong-lanceolate, the similar petals somewhat longer, the stamens included; ovary glabrous.—The leaves supply a black dye (Herrera). The exceptionally strong wood is used for walking sticks, stools, and baskets and in construction of hanging bridges (R. & P.).

Lima: San Rafael, *2282; Sawada P110; Mathews 891*. San Marcos, prov. Huari, *Raimondi*.—Huánuco: (*Haenke*). Monzón, 2,700 meters, *Weberbauer 3730*.—Huánuco, *Ruiz & Pavón*, type. Ambo, *3147*.—Junín: Huacapistana (Weberbauer, 247).—Cuzco: *Gay*. Paucartambo and Quispicanchi (*Herrera*). Urubamba (Weberbauer, 175); *Soukup*. Ecuador. "Lloque," "llogui," "lloqque."

11. HOMALIUM Jacq.

Reference: Blake, Contr. U. S. Nat. Herb. 20: 221–235. 1919.

Trees or shrubs with pinnately nerved usually toothed but eglandular leaves and mostly axillary racemes, rarely panicles, of

short-pedicelled hermaphrodite flowers. Calyx tube turbinate, the usually 5–7 parts persisting in fruit as also the similar petals. Stamens opposite the petals, solitary or fascicled and bearing cushion-like processes at base, just between the petals. Anthers globose. Ovary more or less united to calyx, 1-celled, the styles 2–6. Capsule somewhat leathery, the seeds without aril.

Homalium pedicellatum Spruce ex Benth. Journ. Linn. Soc. Bot. 4: 36. 1860; 231.

Branches rather rough, the young branchlets, petioles and leaf-nerves beneath sparsely pilose or glabrate; petioles 3–8 mm. long; leaves oblong-ovate or obovate-elliptic, mostly rounded at the acutish base, shortly and bluntly attenuate at apex, coarsely crenate-dentate, fugaciously barbellate in the nerve-axils beneath, chartaceous, lustrous above, reticulate-veiny on both sides, mostly 8 cm. long, 4–5 cm. wide; racemes terminal on axillary branchlets, ashy-pubescent, lax, simple or apparently sometimes few-branched; lower pedicels 5–7 mm. long; flowers 5–6-merous, more or less ashy-puberulent, the narrowly lanceolate sepals to 3.5 mm. long, the elliptic- or oblong-ovate petals 3.5–4.5 mm. long, nearly equaled by the glabrous stamens, these mostly in threes; appendages puberulent; ovary loosely or sparsely villous; styles typically united below or the ovary tip extended as the style-column.—Resembles closely *H. guianense* (Aubl.) Warb. with petals 2.5–3.4 mm. long and is very similar to *H. eleutherostylum* Blake, l.c. 232, the leaves more pubescent, the styles distinct to the base; it, in turn, is near *H. racemosa* Jacq., with glabrous branchlets. Unfortunately *Tessmann 5203* seems intermediate in characters to these forms or is itself another species; it is nearly glabrous, has branching racemes, styles not united. As there is other material difficult to place, it may be that the species have been drawn on too fine lines. An Amazonian species better marked is *H. densiflorum* Spruce, the flowers subsessile, 2–2.4 mm. long, crowded in panicles with suberect branches. Illustrated, Mart. Fl. Bras. 13, pt. 1. *pl. 101.*

Loreto: 17 meters high, Soledad, *Tessmann 5203.* Flowers yellow, Iquitos, *Klug 1297.* Brazil; Venezuela.

12. XYLOSMA G. Forst. f.

Myroxylon J. & G. Forst. Char. Gen. 125. 1776. *Hisingera* Hellen. in Vet. Akad. Handl. Stockh. 32. *pl. 2.* 1792. *Hiesingera* Endl. Gen. Suppl. 5: 47. 1850.

Frequently thorny and more or less pubescent shrubs or small trees with shortly petioled usually toothed estipulate leaves and small flowers borne in bracteolate axillary racemes, often reduced to appear as axillary clusters or glomerules. Flowers usually dioecious, the sepals 4–5 (6–7), somewhat united at base, the petals none. Stamens many from a ring or glandular disk, the long filaments free. Ovary lacking in male flowers, free, 1-celled. Style nearly obsolete to well-developed, the stigma sometimes lunate and more or less lobed. Fruit a berry with few seeds.

The following key is not satisfactory and I doubt the validity of some species including those proposed by me; *X. minutiflorum* Macbr., Candollea 5: 392. 1934, omitted, is evidently, from fruiting material of the same collection in Herb. Delessert, Geneva, a species of *Phyllanthus*, probably *P. guianensis* Aublet or affine. The type specimen is only in flower, but of course the resemblance even so is only superficial.

Leaves pilose beneath, at least on the nerves.

Petioles 3–5 mm. long; leaves to about 8 cm. long.... *X. pilosum.*

Petioles about 10 mm. long; leaves 12–18 cm. long.. *X. Ruizianum.*

Leaves glabrous or essentially so.

Leaves cordate-ovate..... *X. cordatum.*

Leaves distinctly acute at base.

Leaves ample; male disk-lobes many; style lunately several-lobed..... *X. Tessmannii.*

Leaves small to medium, rarely 10 cm. long or longer.

Leaves mostly 3.5–6 cm. wide, rather coarsely toothed or crenate-dentate; petioles 2–5 mm. long.

Male disk 6–10 gland-lobed; style shortly bifid, the stigma lunate..... *X. Salzmannii.*

Male disk crenate; stigmas 2, subulate..... *X. digynum.*

Leaves 2–3 (–4) cm. wide, minutely crenate-dentate; petioles 1–2 (3) mm. long..... *X. Benthami.*

Xylosma Benthami (Tul.) Eichler in Mart. Fl. Bras. 13, pt. 1: 447. 1871. *Flacourtia Benthami* Tul. in Ann. Sci. Nat. sér. 3. 7: 291. 1847. *F. nitida* Benth. in Hook. Journ. Bot. 3: 119. 1851? *Xylosma armatum* Macbr. Candollea 5: 391. 1934?

Branches short, glabrous, sometimes smooth, sometimes armed with spines 1–3 cm. long; petioles scarcely 1 mm. long; leaves crowded, elliptic, shortly cuneate at base, obtuse or acutish, mostly

about 4.5 (–7) cm. long, 2 (–3) cm. wide, coriaceous, not at all lucid-punctate, minutely denticulate, slightly lustrous above, faintly reticulate-veined; fascicles many, the pulverulent pedicels 2–2.5 mm. long; sepals 4–7, broadly ovate, 1 mm. long; stamens strongly unequal, to 3 mm. long, usually only about 12, apparently sometimes as many as 30, glabrous; male disk 8–10 crenate-lobed; style short, bifid at apex.—The type of *X. armatum* is male; the leaves vary in degree of glandular-serration. But it seems to me doubtful if the Peruvian shrub is distinct.

San Martín: San Roque, *Williams 7237* (type, *X. armatum*). —Loreto: Fortaleza near Yurimaguas, *Klug 2807* (det. Standl.). Juanjuí, *Klug 3835* (det. Standl. as *X. armatum*).

Xylosma cordatum (HBK.) Gilg, Pflanzenfam. ed. 2. 21: 434. 1925. *Flacourtia cordata* HBK. Nov. Gen. & Sp. 7: 241. 1825. *Berberis rotunda* Macbride, Candollea 6: 3. 1934.

Branchlets unarmed or apparently sometimes armed, puberulent as the short (1–2 mm.) petioles; leaves cordate-ovate, acute, the larger 4 cm. long, coriaceous, epunctate, lustrous above, reticulate-veined, especially beneath, with minute incurving callus-teeth, the callus thus lying on the leaf-edge; bracts ciliate, equaling the pedicels, these 3–4 mm. long; male flowers 4–6 in the upper axils, the female solitary in the lower; former glabrous, the 5 sepals ovate-orbicular, equaled by the 35 glabrous stamens, the anthers oblong, the filaments free but accompanied by 25 (30) free hypogynous glabrous glands; fruit globose, red, to 6 mm. thick.—Clos, Ann. Sci. Nat. sér. 4. 8: 254. 1857, omits this shrub from the genus and probably from the family but Gilg by inference transfers it and associates it with *X. digynum*. My synonym probably belongs here; cf. note in this work under *Berberis*. Dr. Weberbauer has kindly supplied the data for the collection, data which never lacks and is in commendable completeness for all his collections. My phrase "Without locality" refers in this work only to the particular specimen seen.

Piura: Ayavaca, *Bonpland*, type.—Cajamarca: Above Namas, 3,200 meters, *Weberbauer 7218*, male; *7220*, female (type, *B. rotunda*).

Xylosma digynum [Benth.] Eichler in Mart. Fl. Bras. 13, pt. 1: 447. 1871. *Flacourtia digyna* Benth. in herb.

Often a medium-sized tree and typically with abundant stout spines, these even to several cm. long; petioles 3–5 mm. long, canicu-

late above; leaves elliptic or elliptic-oblong, shortly attenuate at base, acuminate, 6–12 cm. long, 3–5 cm. wide, rarely somewhat larger, rather densely serrate-dentate, firm-membranous, usually lustrous above but opaque beneath; fascicles congested at the nodes, few-flowered, sessile or subsessile, the peduncle thick; pedicels about 3 mm. long (that of the female flowers shorter and thicker), articulate a little above the base, obsoletely puberulent as the ciliolate ovate 1–1.5 mm. long bractlets; male flowers 3 mm. long, pubescent as the bractlets, the 4 broad sepals 1 mm. long; disk crenate, glabrous; stamens 15–20, twice as long as the calyx; female flowers 1.5 mm. long; stigmas 2, subulate, spreading-erect; capsule 5–6 mm. thick, with 3–4 trigonous lustrous seeds about 4 mm. long.—According to Martius a common name, "auui-uva," means lignum acus; fide Mexia, "christo-casha," thorn of Christ. F.M. Negs. 6510; 13655.

Loreto: Yurimaguas, *Poeppig 2480; Williams 4752.* Lower Río Huallaga, *Killip & Smith 29010.* Florida, *Klug 2276* (distr. as *Casearia* sp.).—San Martín: Zepelacio, *Klug 3285* (det. Standl.). Tarapoto, *Ule 6757* (distr. as *X. Salzmannii*). Chazuta, *Klug 4067* (det. Standl.). Brazil. "Christo-casha," "umuruico" (Huitoto).

Xylosma pilosum Macbr. Candollea 5: 391. 1934.

Shrub with slender branchlets that are densely soft-pubescent with short trichomes; petioles 3–5 mm. long, shortly and densely pilose as the leaf-nerves beneath; leaves ovate-elliptic, broadly cuneate at base, subabruptly acuminate, to 8 cm. long, 3.5 cm. wide, chartaceous-membranous, epunctate, glabrous and somewhat lustrous above, only the midnerve slightly pilose, deeply and obtusely serrate; pedicels lightly pilose, 1.5 mm. long; sepals 4, acute; stamens about 10, nearly 3 mm. long, glabrous, the disk rather prominent.

Loreto: Puerto Arturo, Yurimaguas, *Williams 4977*, type. "Diablo-casha," "supay caspi."

Xylosma Ruizianum Sleumer, Notizbl. Bot. Gart. Berlin 12: 476. 1935.

Young branchlets densely tomentose, with yellowish hairs 0.5 mm. long, as also the 1 cm. long petioles; leaves ovate-oblong, subrotund at base, gradually or shortly acuminate, the acumen 1–2 cm. long, obtuse, 12–18 cm. long, 6–10 cm. wide, rigid chartaceous, shortly pubescent above on the nerves, yellowish velutinous-tomentose beneath especially on the 7–8 lateral nerves, the veins laxly reticulate; margin coarsely subcrenate-dentate, the obtuse teeth 1.5–2 mm. high, and about 5 mm. remote; axillary spines short, 6

mm. long; fascicles dense, axillary; pedicels 1–2 mm. long; sepals 4–5, ovate, obtuse, tomentose, about 2 mm. long, the indefinite glabrous stamens as long.—Allied by the author to *X. rubicundum* (Karsten) Gilg with still larger leaves.

Peru (?): Without locality, *Ruiz* (Herb. Dahlem); *Ruiz & Pavón* (Herb. Madrid).

Xylosma Salzmanni (Clos) Eichler, l.c. 448. *Hisingera Salzmanni* Clos, Ann. Sci. Nat. sér. 4: 8: 224. 1857.

Nearly glabrous, the trunk and branches stoutly armed, the simple spines often lacking on the young branchlets; leaves mostly ovate-oblong and ovate, obtuse or obtusely produced, shortly attenuate at base, more or less crenate-dentate, membranous, somewhat lustrous on both sides or opaque beneath, 4–10 cm. long, 2–5 cm. wide, often with 2–4 glands at the base of the blade; petioles 5–10 mm. long; flowers umbellate-fasciculate, the 4–5 sepals ciliate, about 1 mm. long, acute, the pedicels about 6 mm. long or much shorter; disk of male flowers 6–10 gland-lobed, the stamens 14–25, much longer than calyx; disk of female flowers reduced to a ring; style shortly bifid, the stigma semilunate.—Stigma entire or more or less lobed and leaves variable according to Eichler, from whom this description, as others, is compiled. F.M. Negs. 13658; 24080.

Huánuco: Pozuzo, *4551*.—San Martín: San Roque, *Williams 7976*. Tarapoto, *Ule 6757*. Juanjuí, *Klug 4165* (det. Standl.).—Loreto: Yurimaguas, *Williams 4487?* Mouth of Santiago, *Tessmann 3574?* Río Mazán, *Schunke 174; 83*. Brazil to Uruguay. "Costadosache," "cunchucra," "cunshi-cashan."

Xylosma Tessmannii Sleumer, Notizbl. Bot. Gart. Berlin 12: 477. 1935.

Tree with numerous spines, these even to 10 cm. long; branchlets terete, somewhat pubescent; petioles about 1 cm. long; leaves elliptic-oblong, broadly cuneate at base, attenuate to the apex, this itself abruptly attenuate-acuminate and 1.5–2.5 cm. long, papery, glabrous or nearly, 14–22 cm. long, 6.5–10 cm. wide; margin coarsely and regularly subcrenate-dentate, the teeth obtuse, mostly 5 mm. remote and 2 (–4) mm. high; lateral nerves 6–7, with the reticulate veins little prominent; fascicle many-flowered, the slender puberulent pedicels 5–6 mm. long; sepals ovate-acuminate, 4–5, puberulent and ciliate, yellowish-green, scarcely 1.5 mm. long; disk lobes many, scalelike, glabrous; stamens indefinite, 3 mm. long; style bifid, the

stigmas flabellately lobed.—Known to attain 12 meters, branching at 4 meters.

San Martín: Pongo de Cainarachi, *Klug 2632*. San Roque, *Williams 7463*.—Loreto: Lower Río Nanay, *Williams 476*. Flood-free wood, Iquitos, *Tessmann 5153*, type. Balsapuerto, *Klug 3026* (distr. as *Casearia macrophylla*). Brazil. "Supai kasha," "umuriuco."

13. RYANIA Vahl

Patrisia L. C. Rich. Act. Soc. Hist. Nat. Paris 1: 110. 1792.

More or less stellately pubescent shrubs or trees with entire epunctate leaves, short petioles, caducous stipules and rather large hermaphrodite flowers borne solitary or few in the leaf-axils on geniculate pedicels that are scale-bracteate at base. Calyx 5-parted nearly to base, the 2 inner of the lanceolate divisions smaller. Petals none. Stamens many in 1–2 rows, the anthers linear. Ovary 1-celled with 2–6 placentae and the style as many-parted at tip. Fruit a berry-like capsule, often spongy-appendaged. There is a cupulate ring or disk between the ovary and the stamens. The name *Ryania* has been conserved; nevertheless that of Richard has been employed in Pflanzenfamilien, ed. 2.

Ryania pyrifera (L. C. Rich.) Uittien & Sleumer in Pulle, Fl. Surinam 3: 286. 1935. *Patrisia pyrifera* L. C. Rich. Act. Soc. Hist. Nat. Paris 1: 111. 1792. *R. speciosa* Vahl, Eclog. Am. 1: 51. 1796.

Slender branched tree, the younger branchlets, petioles, pedicels and sepals rusty-tomentose; stipules narrow, 4–8 mm. long, equaling the petioles; leaves nearly oblong or rarely a little obovate, obtuse and rounded or narrowed at the slightly unequal base, more or less abruptly acuminate, firm, rusty-tomentose at least on the mid-rib above, mostly 10–15 cm. long, 4–6 cm. wide; flowers 1 or 2 in the upper leaf-axils, subsessile, the lanceolate, acuminate, spreading sepals 2.5–3 cm. long but later erect and enclosing the large, densely corky-rugose, stellate capsule; stamens about as long as the sepals, the linear anthers 4–6 mm. long, the filaments filiform.—The variety *tomentosa* (Miq.) Sleumer has the leaves densely rusty-tomentose beneath. Leaves rather variable in size and shape. Often only 4–7 meters high. F.M. Negs. 34867; 34868 (var.).

San Martín: Pongo de Cainarachi, *Klug 2635*.—Loreto: Pampa del Sacramento, *Castelnau*. Río Itaya, *Williams 3443*. Iquitos and Mishuyacu, *Klug 7; 162; 795; 953; Tessmann 5361; Williams 8229; Killip & Smith 29900; 27113*. Mouth of Santiago, *Tessmann 4096*. To Trinidad and the Guianas.

14. LUNANIA Hook.

A tree with entire lucid-punctate 3-nerved estipulate leaves and almost minute flowers borne on greatly elongate usually axillary racemes that are sometimes sparsely branched. Calyx short-tubular with 2–5 lobes. Petals none. Stamens 6–12, frequently with as many scales around a cupulate disk, the filaments mostly very short. Ovary free, 1-celled, pointed, with 3 broad placentae and 3 short styles or these nearly obsolete. Capsule coriaceous, globose, dehiscent, the seeds small, punctate.

Lunania parviflora Spruce ex Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 90. 1861. *L. cuspidata* Warb. in Pflanzenfam. 3, 6a: 47. 1893.

Slender, glabrous or nearly glabrous tree; petioles 1–1.5 cm. long; leaves chartaceous, lustrous above, finely net-veined, 3 (–5) -nerved from the rounded base, rather abruptly caudate-acuminate, generally 12–15 cm. long, 5–6.6 cm. wide; racemes often 2 dm. long, the puberulent rachis notably slender, the small flowers shortly pedicellate or subsessile; sepals reflexing; stamens nearly always 10, subsessile, the short cupulate disk minutely and obtusely ciliolate-lobed; style short, conical, 3-parted on the young capsule.—Warburg distinguished his species, based on *Poeppig 2163*, by its 8 stamens, disk lobes lacking, pubescent branchlets and 3-nerved leaves; I have not been able to see these differences, or they are not concomitant. Both the Poeppig and Spruce collections, however, seem to be smaller-flowered than most of the other material collected since and certainly this, although mostly determined as *L. cuspidata*, has a typically developed disk. I do not know the Poeppig locality. F.M. Negs. 21317; 13639.

Huánuco: Pozuzo, *Weberbauer 6752*.—San Martín: Tarapoto, *Spruce 3909*, type. Pongo de Cainarachi, *Klug 2640; 2687* (det. as *L. cuspidata*).—Junín: Pichis Trail, *Killip & Smith 26217*.—Loreto: Yurimaguas, *Ule 6295; 6294; Williams 5059* (pedicels long). Pebas, *Williams 1895*. Balsapuerto, *Klug 2901* (det. *L. cuspidata*). Cachopuerto, *Klug 3135* (det. *L. cuspidata*). Mishuyacu near Iquitos, *Klug 158; 622* (abnormal or var.?). Without locality, *Poeppig 2163* (type, *L. cuspidata*).—Río Acre: *Ule 9630; Krukoff 5227; 5275*. Brazil. "Piña-quiro," "charapa-huatana."

15. TETRATHYLACIUM Poepp. & Endl.

Edmonstonia Seem. Bot. Voy. Herald 98. *pl. 18*. 1853.

A shrub-tree with ample, opaque, remotely serrate or subentire leaves and small, connately bracteolate flowers borne in crowded spikes panicled from the trunks and branches. Sepals none or minute. Petals 4, connate into a globose tube. Stamens 4, the anthers cordate. Ovary with 4 placentae, the style obsolete. Capsule coriaceous, tardily dehiscent.

Tetrathylacium macrophyllum Poepp. & Endl. Nov. Gen. & Sp. 3: 34. *pl. 240.* 1845. *Edmonstonia pacifica* Seem. l.c.

Small tree; petioles robust, 5–12 mm. long; leaves oblong, deeply cordate to truncate at base, shortly acuminate, opaque, subcoriaceous, sometimes slightly pubescent beneath, even to 3.5 dm. long, 16 cm. wide, many smaller; inflorescence broom-like, the rachis flexuose, sometimes 14 cm. long, 10 cm. across at top; flowers sessile, crowded, yellowish-tomentulose within as the style, the cordate anthers conspicuously exserted; bractlets persisting.—The only species and unmistakable.

San Martín: Pongo de Cainarachi, *Klug 2702* (det. Standl.). Caballo-Cocha, *Williams 2130* (det. Harms).—Loreto: Yurimaguas, *Ule 6293; Poeppig,* type; *Spruce 3881; Williams 4010; 3922.* Pongo de Manseriche, *Tessmann 3892.* "Llaja."

16. CASEARIA Jacq.

Reference: Eichler in Mart. Fl. Bras. 13, pt. 1: 457–488. 1871.

Tree or tree-like shrubs with entire or toothed usually lucid-punctate and lucid-lineate leaves, small deciduous stipules and small hermaphrodite flowers fascicled or capitate in the leaf-axils. Branchlets rarely thorny. Pedicels very short with scaly bracts, sometimes two united bracteoles. Calyx tube short or long with 4–6 teeth, persistent. Petals none. Stamens 6–12–25 in a single row with as many staminodia, alternating free or attached to each other or with the filaments sometimes forming a stamineal corona. Filaments slender, anthers small. Ovary free, 1-celled with 2–3 placentae. Style simple or trifid, often short. Capsule dehiscent with 1-several often hairy seeds. I acknowledge with appreciation my indebtedness after Eichler to Sleumer's research, notably in Notizbl. Bot. Gart. Berlin 11: 953–960. 1934 and 12: 52–54. 1934. Besides the following there are two collections in herbaria. *Williams 2738* from La Victoria once given an herbarium name by me is obscure; *Klug 3343* was distributed as *C. sylvestris* but the precocious flowers are without disk processes and have only 4 stamens; it suggests Celastraceae. *C. Mathewsii* Turcz. Bull. Soc. Nat. Mosc. 36, pt. 1: 608. 1863 based

on *Mathews 1649* without locality from Peru has not been identified from the description, which gives no essential character. Williams records for an unknown species the native name "quillo bordon."

Branchlets exuding resin at the leaf-nodes; lateral nerves distinctly perpendicular-ascending near the margins.....*C. resinfera.*

Branchlets not resiniferous; lateral nerves horizontal-ascending.

Stamens 8, more or less connate with the disk lobes; stigma capitate; flowers cylindrical; stipules caducous...*C. aculeata.*

Stamens 10–25, the disk lobes free or rarely a little connate with the filaments, or the former united into an intrastamineal crown.

Leaves nearly always lucid-punctate or (and) lineolate at least obscurely against strong light; disk lobes, if connate, not into an intrastamineal crown; stamens 10–15.

Calyx lobes reflexing from the base at anthesis; anthers glabrous.

Leaves glabrous or glabrate.

Filaments glabrous; pedicels elongate.....*C. Pavoniana.*

Filaments villous below; pedicels to 10 mm. long. *C. decandra.*

Leaves rusty-tomentose beneath.....*C. Zahlbruckneri.*

Calyx lobes erect or erect-spreading at anthesis, sometimes widely spreading as in *C. macrophylla* but this with hirsute anthers.

Style simple, the stigma capitate.

Anthers glabrous and without a dorsal gland.

Leaves softly pubescent beneath.

Leaves drying light green or brown; ovary glabrous or strigose above.....*C. obovalis.*

Leaves drying blackish; ovary pilose.

Pedicels 6–7 mm. long; stamens subequal. *C. nigricolor.*

Pedicels to 2 mm. long; stamens unequal. *C. nigricans.*

Leaves glabrous or glabrate (or early pubescent, *C. arguta*).

Leaves entire or essentially.

Leaves to 1 dm. long, 4 cm. wide, often smaller; pedicels longer than flowers.

Stipules subulate, caducous.....*C. petiolaris.*

Stipules lanceolate, subpersistent.*C. prunifolia.*

Leaves usually 1.5 dm. long and one-third to one-half as wide; pedicels shorter than or about as long as flowers.

Stipules conspicuous, subpersistent; stamens unequal.....*C. combaymensis.*

Stipules apparently small, caducous; stamens equal.....*C. fasciculata.*

Leaves serrulate, sometimes minutely.

Serrulations of leaves minute; calyx about 4 mm. long.....*C. tarapotina.*

Serrulations of leaves conspicuous; calyx 5–6 mm. long.....*C. arguta.*

Anthers usually barbate, sometimes minutely, or at least with a dorsal gland.

Dorsal gland glabrous (typically); leaves oblong-elliptic, lineate-pellucid.....*C. Cambessedesii.*

Dorsal gland barbate, sometimes minutely.

Flower-fascicles sessile; leaves thin, subentire; sepals (3) 4.5–6 mm. long.....*C. macrophylla.*

Flower-fascicles often peduncled; leaves firm, more or less serrulate; sepals 2–4.5 mm. long.

Buds rather oblong-ovoid; sepals oblong, about 4 mm. long.....*C. arborea.*

Buds globose or subglobose; sepals suborbicular, about 2 mm. long.....*C. Blanchetiana.*

Styles trifid (minutely), the flowers almost tiny.

Filaments somewhat pilose; anthers glandular. *C. sylvestris.*

Filaments glabrous; anthers eglandular(?)....*C. ovoidea.*

Leaves not pellucid-punctate; disk lobes united into a crown; stamens 10–25; style trifid.

Leaves glabrous; sepals reflexed.....*C. javitensis.*

Leaves softly pilose beneath; sepals erect.....*C. iquitosensis.*

Casearia aculeata Jacq. Enum. Pl. Carib. 21. 1760; 463. *C. spinosa* (L.) Willd. Sp. Pl. 2: 626. 1799. *Samyda spinosa* L. Sp.

Pl. ed. 2. 557. 1762. *C. berberoidea* Rusby, Mem. N. Y. Bot. Gard. 7: 307. 1927, fide Sleumer.

Branchlets spinescent, usually glabrous or less frequently (in Peru), as the younger leaves beneath, rusty-pubescent; petiole sulcate above, 3–5 mm. long, the stipules minute and promptly caducous; leaves ovate or obovate-elliptic and oblong, obtuse or obtusely acuminate, acute at base, subentire or remotely crenate-dentate, firm or membranous, sometimes subcoriaceous, opaque both sides, generally pellucid-punctate and lineolate, 4–10 cm. long, 2–5 cm. wide; lateral nerves 4–5, sometimes tardily glabrate beneath; fascicles sessile, 5–10 (–30) flowered; pedicels 3–6, rarely 8–9 mm. long, the rusty-pubescent or glabrate, whitish calyx 4 mm. long, nearly cylindrical, the 5 oblong lobes erect; stamens 8, glabrous, connate below with the tomentose oblong disk lobes; ovary villous, about equaled by the glabrous style, the stigma capitate; capsule baccate, about 1 cm. thick, the 3–10 seeds in a pulp.—The var. **Tafallana** (Eichler) Macbr., comb. nov., the type as *C. spinosa* var. *Tafallana* Eichler in Mart. Fl. Bras. 13, pt. 1: 464. 1871, from Guayaquil, has subcoriaceous leaves, obscurely observable pellucidity, nerves prominent beneath and fascicles 10–30-flowered. Twigs become thorns (Mexia).

As Eichler remarked, the species is highly variable in pubescence and in form, dentation and size of leaves; however Sleumer has helpfully called attention to the fragility of the long slender pedicels, readily breaking in herbaria, and to the cylindrical (somewhat enlarged at base) yellowish flowers, "characters as yet unknown to me in any other species." But similar technically and probably to be found within Peru is *C. guyanensis* (Aublet) Urban, espinose, the leaves glabrate, papery, crenate, nerves 6–8, ovary sparsely pubescent. F.M. Negs. 13711 (var.); 13690.

San Martín: Tarapoto, *Spruce 4271; Ule 6649* (det. Pilger). Juanjuí, *Klug 3903; 3858.*—Loreto: near Iquitos, *Mexia 6413* (det. Standl.); *Tessmann 4962.* Pongo de Manseriche, *Mexia 6260* (det. Standl.). Florida, *Klug 2326* (det. Standl.). Lower Río Huallaga, *Williams 5199.* Tarapoto, *Williams 5523; 5497; 5774; 5574; 6744; 6895; 6158.* Iquitos, *Williams 8039.* Yurimaguas, *Williams 5199.* Widely distributed in South America to Central America and the West Indies. "Espino del demonio," "espina cacha," "supiecacha" (Huitoto name), "naranjilla," "espuela casha," "supai cashi."

Casearia arborea (L. C. Rich.) Urban, Symb. Ant. 4: 421. 1910; 478. *Samyda arborea* L. C. Rich. Act. Soc. Hist. Nat. Paris 1: 109.

1792. *C. stipularis* Vent. Choix Pl. 46. 1803. *Chaetocrater capitatum* R. & P. Syst. 1: 108. 1798. *C. capitata* (R. & P.) Spreng. Syst. Veg. 2: 355. 1825. *C. Poeppigii* Eichler in Mart. Fl. Bras. 13, pt. 1: 475. 1871.

Branches, at least when young, white-lenticellate; young branchlets and leaves beneath minutely but densely ashy- or rusty-tomentulose, tardily glabrate or the leaves glabrate; petioles subterete, 2–4 mm. long, the sometimes persisting stipules about twice as long; leaves oblong, acute at base, attenuate to tip, densely serrate-dentate, 4–12 cm. long, 1–3.5 (–4) cm. wide, firm-membranous or subcoriaceous, resinous or pellucid-punctate, glabrous and lustrous above; lateral nerves (4) 6–10; axillary umbels sessile or shortly peduncled, 20–30-flowered, the pedicels 2–4 mm. long, equaling the typically ashy-tomentose calyx (in Peruvian plant glabrate), its lobes oblong; stamens 10, free, the anthers glandular-barbellate, the spathulate-oblong disk lobes half as long as the glabrous filaments; ovary strigose or glabrous, the style villous at base, the stigma ovoid-capitate; capsule angled with 3–4 foveolate seeds.—*Killip & Smith 26977* with herb. name is a form, ovary glabrous, flower-cluster sessile. The type of *C. Poeppigii* is very young. F.M. Neg. 13687.

Huánuco: Cuchero, Chinchao and Pozuzo, *Ruiz & Pavón*, type, *C. capitata.*—San Martín: Tarapoto: *Williams 6078; 6612; 6116.*—Loreto: Yurimaguas, *Poeppig 3100*, type; *Williams 4741; 4579; 4529.* Near Iquitos, *Klug 365; Killip & Smith 26977.* Amazonian Brazil to Central America and the West Indies. "Llajas."

Casearia arguta HBK. Nov. Gen. & Sp. 5: 364. 1823; 470. *C. Fockeana* Miq. Ann. Sci. Nat. sér. 3. 1: 39. 1844, fide Sleumer.

Young branchlets and leaves, the latter, especially beneath on the nerves, gray-puberulent, glabrate in age; petioles 2–5 mm. long, the stipules scarcely longer, caducous; leaves elliptic- or lanceolate-oblong, little if at all unequal at the shortly acute base, acuminate, 8–15 (–18) cm. long, 3–5.5 cm. wide, serrate-dentate, the membranous pellucid dots minute if obvious, the lateral nerves mostly 6–9; umbels sessile, 20–30-flowered, the pedicels 3–6 (–8) mm. long, ashy-tomentose as the calyx, this 5–6 mm. long, the narrow sepals not reflexed; stamens 10, free, the filaments glabrous or villous below, the disk lobes hirsute, the anthers eglandular, glabrous, elliptic; style glabrous, globose, velvety-tomentose, or glabrate; seeds 6 mm. long, the arils fleshy.—F.M. Neg. 13659.

Río Acre: Tree, 10 meters, *Krukoff 5623; Ule 9624; 9625.*

Casearia Blanchetiana Miq. Linnaea 22: 801. 1849; 475. *C. celtidifolia* Eichler in Mart. Fl. Bras. 13, pt. 1: 477. 1871.

Similar to *C. arborea* but glabrous, the leaves thin, the buds ovoid-subglobose, the fascicles and flowers subsessile and only 6–15-flowered, the sepals suborbicular.—Some of the stipules may persist. The few hairs on the small anthers are often visible only under the binocular. The calyx is papery, drying yellowish or pale brown. F. M. Negs. 13661; 13665.

Loreto: Florida, Río Putumayo, *Klug 2294* (det. Standl.). Río Itaya, *Williams 3393*. Iquitos region, *Tessmann 3910*. Yurimaguas, *Ule 6756; Poeppig 2263*, type, *C. celtidifolia*. La Victoria, *Williams 2758*. Balsapuerto, *Klug 2982*. Brazil. "Ullu-mullaca," "uchu mullaca."

Casearia Cambessedesii Eichler, l.c. 475. *C. Bangii* Rusby, Mem. Torrey Club 3, no. 3: 34. 1893, fide Sleumer.

Allied to *C. arborea* but the branchlets and leaves soon glabrate, the leaves abundantly punctate and, or only, resinous-lineate with 7–12 lateral nerves, the buds ovoid, the calyx lobes broadly oblong-ovate, 4 mm. long, the disk lobes subequaling the barbate-based or glabrate filaments; anthers typically glabrous, sometimes sparsely hirsute as ovary or this with style strigose.—The leaves and calyx are much firmer than in *C. Blanchetiana*. F.M. Neg. 13662.

San Martín: Tarapoto, *Williams 6116* (distr. as *C. Poeppigii* as also *6612*, Alto Río Huallaga).—Loreto: Florida, *Klug 2307*. Balsapuerto, *Klug 3112* (narrow leaves, some anthers sparsely hairy). Brazil to Colombia.

Casearia combaymensis Tul. Ann. Sci. Nat. sér. 3. 7: 362. 1847. *Casearia singularis* Eichler in Mart. Fl. Bras. 13, pt. 1: 473. 1872, fide Sleumer. *Casearia membranacea* Britton, Bull. Torrey Club 17: 214. 1890, fide Sleumer.

Branchlets and leaves glabrous; petiole 5–15 mm. long, stipules conspicuous, persisting on the branchlets toward their tips, green or pale, 5–8 mm. long; leaves obovate-oblong, nearly caudate-acuminate, attenuate at base, 15–25 cm. long, 5–10 cm. wide, often smaller, very thin to subcoriaceous, obscurely if at all resinous-pellucid, nearly opaque, entire, 6–8 lateral nerves prominent beneath; fascicles axillary and lateral, about 10-flowered, the gray-puberulent pedicels (2–) 3–6 mm. long, and calyx subequal, the ovate-oblong suberect lobes of the calyx about twice as long as the subhemispheric tube; stamens 10, shortly connate with the disk lobes, the longer

filaments densely villous, their anthers glabrous, eglandulose, the alternate ones glabrous, their anthers larger; disk lobes linear-clavate, glabrous, about equaling the shorter stamens; ovary subglobose, included in the calyx tube, glabrous as the very short style.—*C. singularis* of the Guianas was described as having subulate caducous stipules and is probably distinct. F.M. Negs. 21322 (*singularis*); 34893.

Loreto: Ucayali region, *Tessmann 3229*.—Junín: Puerto Bermudez, 375 meters, *Killip & Smith 26448* (young).—Loreto: Soledad, *Killip & Smith 29578; 29781; 29692*. San Antonio, *Killip & Smith 29358* (tree, 10 meters); *29517*. Balsapuerto, *Killip & Smith 28659*. —Río Acre: *Ule 9726*. Brazil to Colombia and Guiana.

Casearia decandra Jacq. Sel. Stirp. Am. Hist. 133. *pl. 85*. 1763; 467. *C. parvifolia* Willd. Sp. Pl. 2: 628. 1799.

With the floral characters of *C. arguta* but the oblong-lanceolate calyx-lobes finally reflexing and the capsule always glabrate; otherwise differs in the fugacious pubescence being rusty-tomentose, the ovate, rather abruptly acuminate leaves only 4–6 (–11) cm. long, 1–3 (–4) finely serrate or subentire, the umbels sometimes fewer-flowered, the flowers 3–4 mm. long.—With the distribution of *C. arguta* (Sleumer); pellucid dots and lines often many. *Williams 6219* not restudied.

San Martín: Tarapoto, *Williams 6219* (or aff.).—Loreto: Pumayacu, 600–1,200 meters, *Klug 3212* (det. A. C. Smith). Yarina Cocha, *Tessmann 5415*. Ucayali, *Tessmann 3458*. Florida, *Klug 2275; 2353*. Mouth of Santiago, *Mexia 6108*. Warm Central and South America. "Fortuga caspi," "titibeguisi-ey" (Huitoto), "limon caspi."

Casearia fasciculata (Ruiz & Pavón) Sleumer, Notizbl. Bot. Gart. Berlin 11: 955. 1934; as to name. *Chaetocrater fasciculatum* Ruiz & Pavón, Syst. 1: 107. 1798. *Casearia maculata* Pilger, Verh. Bot. Ver. Brandenb. 47: 161. 1905.

Allied to *C. combaymensis;* petioles to 10 mm. long; leaves rather obovate-elliptic, acute at base, caudate-acuminate, to 2 dm. long, 6 cm. wide, membranous, punctate-lineolate, pellucid, entire; fascicles dense, axillary, sessile; pedicels shorter than the ashy-puberulent flowers; calyx lobes rounded, about 2 mm. long; disk lobes narrow, somewhat villous, connate below with the slightly villous filaments; anthers broadly ovoid, glabrous; ovary glabrous, the stigma capitate.—This follows Sleumer's interpretation of the

species, accepting the type as the plant so labeled at Madrid; the specimen at Geneva, however, also with original label, is *C. arborea*. Of course the Madrid collection may best be taken as type.

Huánuco: Chinchao about Hualqui, *Ruiz & Pavón*, type. Brazil.

Casearia iquitosensis Macbr. Candollea 8: 22. 1940.

Frutex vel arbuscula; ramulis foliisque subtus molliter et persistenter ferrugineo-pilosis; petiolis crassis 5–8 mm. longis; foliis chartaceo-coriaceis supra nervis impressis exceptis glabris, nitidis, utrinque prominenter laxeque reticulato-venosis, oblongo-ellipticis, basi rotundato-acutis, subabrupte breviterque acuminatis, plerumque 2.5 dm. longis, 10 cm. latis plus minusve repando-crenato-denticulatis; fasciculis florum plerumque axillaribus sessilibus; pedicellis ad 6 mm. longis adpresse pilosis; calycis tubo brevissimo, lobis erectis late oblongis, 5.5 mm. longis, fere 2.5 mm. latis, puberulis haud hirsutis; staminibus 10–15, glabris; disci lobis dense tomentosis filamento multo brevioribus in coronam intrastaminealem conniventibus; stylo inferne villoso, apice trifido; capsula trigono-ovidea 10 mm. longa, extus dense ferrugineo-puberula, intus ferrugineo-floccosa; seminibus 1–3, subglobosis molliter tomentoso-pilosis.—Nearly *C. dentata* (Aubl.) Eich. of Guiana with 6-angled glabrate capsules and *C. lasiosperma* Tr. & Pl., Colombian, with leaf-nerves elevated above, hirsutulous calyces and glabrate capsules 15 mm. long.

San Martín: Near Moyobamba, *Klug 3560* (det. Standl.).—Loreto: Iquitos, *Williams 3708; 3737* (type fruit and flower); *7975; 3749; 8015*.—Río Acre: *Killip & Smith 29836; Klug 545; 499; 3; 98; Krukoff 5237*.

Casearia javitensis HBK. Nov. Gen. & Sp. 5: 366. *pl. 479*. 1823.

Shrub or tree with widely spreading simple branches, the younger, as the leaves on the nerves beneath, puberulent but soon glabrate; petiole 3–10 mm. long; leaves usually oblong, obtuse at base, acuminate, subentire or more or less serrate-dentate, firm-membranous, not punctate, 6–30 cm. long, 2.5–10 cm. wide; lateral nerves 5–7; fascicles axillary, sessile, 20–60-flowered, the pedicels usually 4–7 mm. long, gray-puberulent as the calyx, this 3–4 (–5) mm. long, with very short tube, the oblong-obtuse lobes reflexing at anthesis; stamens 10 or 15, glabrous, disk lobes linear-clavate, rusty-tomentose, connivent in a crown between the stamens; style tomentose, trifid, the stigmas capitate; capsules tomentose, the 1–2 globose seeds pubescent.—F.M. Neg. 13675.

Loreto: Yurimaguas, *Williams 3883; 4590* (pedicels longer). Caballo-Cocha, *Williams 2317*. Mishuyacu, *Klug 227; 520*. Iquitos, *Mexia 6272* (det. A. C. Sm.); *Killip & Smith 27282*.—San Martín: Pongo de Cainarachi; *Klug 2672* (det. Standl.).—Río Acre: *Ule 9626*. North to Central America and the Guianas. "Capanca."

Casearia macrophylla Vahl, Eclog. Am. 2: 32. 1798; 470.

Glabrous or the growing parts sparsely puberulent; petioles 5–7 mm. long; leaves elliptic-oblong or obovate-oblong, acute at base, acuminate, subentire, 1–2 dm. long, 4–10 cm. wide, usually minutely pellucid-puncticulate; umbels 10–20-flowered; anthers subrotund, glandular barbate-villous; ovary glabrous, style hirsute, the globose capsule tubercled but glabrous, the seeds smooth, irregularly flattened.—Otherwise similar to *C. arguta*.

A puzzling shrub, possibly distinct, may be named var. **barbatula** Macbr., var. nov., foliis subcoriaceis, floribus paucis, vix 3 mm. longis: Iquitos, *Killip & Smith 26977* (type); and *27375*. Some of the material cited here or under *C. tarapotina* that is in fruit may be misdetermined. F.M. Neg. 21323.

San Martín: Tarapoto, *Spruce 4887* (var.).—Loreto: Mishuyacu near Iquitos, *Klug 20*. Yurimaguas, *Williams 4456*. Río Nanay, *Williams 735*. Timbuchi, *Williams 995* (with herb. name). Florida, *Klug 2281; 2257; 2241* (flowers white). Balsapuerto and Pongo Cainarachi, flowers greenish-cream, *Klug 2637; 2665; 3026* (all det. Standl.). Yurimaguas, *Williams 4934; 4614; Killip & Smith 29029; 28314* (this last tree, 8 meters). Brazil to Colombia and Guiana. "Usico-ey," "cuipe-ey," "sasishy-ey" (Huitoto), "achu-caspi," "uchu caspi," "oje de tucunare."

Casearia nigricans Sleumer, Notizbl. Bot. Gart. Berlin 11: 956. 1934.

Rusty-pilose tomentose even to the calyx, except the leaves above; leaves lanceolate or oblanceolate, mostly broadest at the middle, strongly attenuate to the short petiole (3–4 mm. long), long-acuminate, minutely toothed, the teeth about 0.5 mm. high, 3–4 mm. distant, subglabrous above; lateral nerves 10–12; fascicles axillary, 10–15-flowered, sessile; pedicels to about 1.5 mm. long; sepals 5, ovate-oblong, obtuse, blackish, about 4 mm. long; stamens 10, the 5 longer 2.5 mm. long, the shorter alternating with the pilose disk lobes; ovary ovoid, densely pilose.—Section *Pitumba* (Sleumer). Known to attain 5 meters. Leaves thin, drying black. Here perhaps belongs *Tessmann 3569*, region Marañón.

Loreto: Mountain east of Moyobamba, 1,200 meters (*Weberbauer 4727*, type).

Casearia nigricolor Sleumer, Notizbl. Bot. Gart. Berlin 11: 957. 1934.

Shrub with sparsely pubescent branchlets and large, thin, subsessile leaves drying blackish, although rusty-tomentose beneath, subglabrous and lustrous above; leaves oblong-ovate or broadly oblong, rounded at base, shortly attenuate at tip, distinctly punctate against a strong light, subentire or the teeth minute, 8.5–16 cm. long, 4–7.5 cm. wide, the nerves little prominent even below; fascicles 15–20-flowered, sessile; pedicels puberulent, 6–7 mm. long; sepals 5, ovate-oblong, obtuse, puberulent both sides, at anthesis spreading or reflexing, about 3 mm. long, stamens 10, all about as long as the sepals, the filaments glabrous, the anthers globose, the disk lobes villous; ovary ovoid, pilose.—Section *Pitumba* (Sleumer). Type 5 meters high. It has been distributed as a new species by me and under a valid name. The type sheet is at Field Museum, *not* "Dahlem."

Libertad: Valley system of the Río Mixiollo, 1,800 meters, *Weberbauer 7051* (type, Field Museum).

Casearia ovoidea Sleumer, Notizbl. Bot. Gart. Berlin 11: 958. 1934.

Small tree, glabrous except for a little pubescence on the ovoid ovary and the three-forked style; petioles about 7 mm. long; leaves ovate or ovate-oblong, broadest above the middle, equilateral, subobtuse at base, obtusely acuminate, membranous, punctate with lines and dots, somewhat lustrous above, minutely and obtusely dentate, the lateral nerves distinctly marked above; fascicles sessile, the pedicels 2 mm. long; sepals 5, oblong, obtuse, erect, 1.5 mm. long; stamens 10, glabrous, the filaments filiform, the disk lobes pubescent, short; style pubescent.—Type 5 meters high. Section *Crateria* (Sleumer). This seems to be a species doubtfully distinct from *C. sylvestris*, or better treated as a variety.

Junín: On open mountain above La Merced, *5260*, type; *Killip & Smith 23672; 23809*.

Casearia obovalis Poeppig ex Griseb. Erläut. Trop. Pflz. 27. 1860; Eichler in Mart. Fl. Bras. 13, pt. 1: 472. 1871. *C. obovata* Poeppig ex Eichler, l.c., not Schlecht., 1839. *C. commutata* Briq. Ann. Conserv. Jard. Bot. Genève 2: 65. 1898.

Leaves loosely grayish-brown pilose beneath, glabrate above unless somewhat puberulent on the nerves, oblong-elliptic or often obovate, usually acuminate or cuspidate, entire or subentire, opaque, green, membranous, 6–15 cm. long, 3–6 cm. wide, the lateral nerves about 5; petioles about 2 mm. long, sometimes longer, somewhat villous, as the young branchlets; fascicles axillary, sessile, several to many-flowered; pedicels 2–3 mm. long; calyx to 4 mm. long, the short tube turbinate, the longer lobes erect, oblong-lanceolate; stamens 10, glabrous, slightly unequal, the lower half connate with the apically barbate disk lobes; style becoming as long as the shorter stamens, glabrous, the stigma capitate; fruit orange-yellow, about 2 cm. thick, the few seeds nearly 10 mm. long.—Evidently Eichler inadvertently wrote the name "*obovata*," because he says "Poeppig mss." and Poeppig wrote, as quoted by Grisebach and also by Eichler in referring to the Grisebach reference, "*obovalis*," which was indeed Poeppig's choice of name. I therefore think that there is no need of a new cognomen if the original one is written correctly. In any case the identity of the species being definite, the Grisebach reference constitutes publication. F.M. Neg. 13668.

San Martín: Tarapoto, *Spruce 3894*.—Loreto: Yurimaguas, *Poeppig 2438*, type; *Killip & Smith 28015; 29097*. Region Ucayali, *Tessmann 3184*.—Río Acre: *Krukoff 5507*. Brazil.

Casearia Pavoniana Sleumer, Notizbl. Bot. Gart. Berlin 11: 958. 1934.

Tree with brownish tomentulose or subglabrous branchlets and rather oblique-based regularly and acutely dentate leaves; petioles about 5 mm. long; leaves moderately acuminate, glabrous, somewhat lustrous above, membranous and distinctly pellucid-punctate, the lateral nerves well-marked only beneath; fascicles 15–20-flowered, sessile; pedicels slender, tomentose, some scarcely 10 mm. long, or shorter than 1.5 cm.; sepals lanceolate, obtuse, margins puberulent, 3 mm. long; stamens 10, the 5 longer equaling the sepals, the filaments glabrous, the very short disk lobes villous as the ovoid ovary that is extended by style as long as the longer stamens.—Section *Pitumba* (Sleumer). According to the author, Ruiz & Pavón named it under another genus in volume 4 of their *Flora* but he has made the name untenable in *Casearia* by using it for another species; if the plate in volume 4 was with analysis the name was not "ined." F.M. Neg. 28940.

Junín: Vitoc, *Ruiz & Pavón*, type. La Merced, 1,000 meters, *Weberbauer 1862*.

Casearia petiolaris Poeppig ex Eichler in Mart. Fl. Bras. 13, pt. 1: 471. 1871.

Allied to *C. obovalis* but glabrous or essentially so except the ashy-tomentulose pedicels and calyces; leaves oblong, rather long-attenuate to the petiole, this 6–8 mm. long, acuminate, the resin glands few and little pellucid; pedicels 3–5 mm. long; stamens free, the filaments ciliate; style villous at base.—F.M. Neg. 24109.

Loreto: Yurimaguas, *Poeppig 2482*, type.

Casearia prunifolia HBK. Nov. Gen. & Sp. 5: 364. 1823.

Stipules lanceolate, persisting, those on the sterile shoots to 5 mm. long; leaves thin, pellucid-punctate in the type (not according to original description), oblong-lanceolate, 8–10 cm. long, mostly 2.5–3.5 cm. wide, gradually caudate-acuminate, subentire, subsessile at the attenuate base, glabrous, the lateral nerves (about 5) with the slender veins rather prominent beneath; flowers few, the clusters sessile, the pedicels puberulent, to 5 mm. long; sepals appressed, pubescent or glabrate without, suberect or perhaps reflexing, acute, nearly 3 mm. long; filaments lightly pilose above, exserted, the alternate shorter, connate below into a tube, twice as long as the densely short-hirsute staminodes; anthers glabrous; style pilose, simple, the stigma capitate.—In the type at Paris the leaves are pellucid-punctate (as to attached leaves) but there may be some mixture with *Xylosma prunifolia* (HBK.) Griseb., which is a true *Xylosma* of Colombia without staminodes. The Colombian *Flacourtia Benthami* Tul. (*F. prunifolia* as to Bentham, Pl. Hartw. 160, not HBK.), also confused, has leaves 3–4 cm. wide, 5–8 cm. long, somewhat callous-toothed; cf. *C. combaymensis*. F.M. Neg. 34888.

Cajamarca: Bacamores near Jaén, *Bonpland*, type.

Casearia resinifera Spruce ex Eichler, l.c. 466.

Unarmed, glabrous, the dark-colored elenticellate branchlets exuding a resin at the leaf nodes; petioles 5–10 mm. long; leaves oblong or narrowly oblong, acute or broadly cuneate at base, rather caudate-acuminate, 1.5–2.5 dm. long, 4.5–7 cm. wide, subentire or remotely serrulate, subcoriaceous, most densely and minutely pellucid-punctate, pellucid lines none, lateral nerves 11–13, subperpendicular; capsules ovate-oblong, 14 mm. long, obtuse, glabrous, the seeds many, smoothish, 4 mm. long. F.M. Neg. 13688.

Loreto: Mishuyacu, *Klug 307*. Brazil.

Casearia sylvestris Sw. Fl. Ind. Occ. 2: 752. 1800; 481.

Shrub or small tree, the growing parts at least more or less rusty-puberulent but typically glabrate in age (cf. variety); branches gray, lenticellate; stipules cordate-ovate or suborbicular, minute, caducous; petioles 2–10 mm. long; leaves oblong or elliptic and lanceolate, little if at all unequal at the acute narrowed or rounded base, mostly narrowly acuminate and average size, that is, 6–9 cm. long, 2–3 cm. wide, or only somewhat smaller or larger, serrulate dentate or subentire, membranous to coriaceous, usually the former, usually minutely pellucid-punctate and lineolate, the lateral nerves 5–8; umbels axillary, sessile, 10–many-flowered; pedicels glabrous or puberulent, 2–4 mm. long, subequaled by the glabrate-puberulent pale flowers; calyx tube campanulate, the lobes broad, erect-spreading; stamens 10, free, the filaments sparsely pilose, the subglobose anthers glandular, glabrous; disk lobes spathulate, densely tomentose-barbate, scarcely to much shorter than the filaments; style trifid, glabrous or at base pilose; capsule glabrous.—Highly variable in foliage and pubescence. The var. *chlorophoidea* (Rusby) Sleumer has glabrous flowers, the leaves entire or nearly; var. *Lingua* (Camb.) Eichler, the leaves beneath, at least the younger, the petioles, pedicels and calyces finely gray-tomentulose, and the floral parts more pilose. This form is called "lingua de Tiu" in Brazil. Variable as is the species it is marked by the free insertion of the disk lobes among the stamens, the style nevertheless trifid. A few collections of the many known are:

San Martín: San Roque, *Williams 7526; Ule 6459* (det. Pilger); *Spruce 4059*. Alto Río Huallaga, *Williams 6831; Weberbauer 6824* (form with opaque leaves with herb. name).—Huánuco: Pillao, Pozuzo, *Ruiz & Pavón*.—Junín: La Merced, *Killip & Smith 23809; 25097*.—Ayacucho: Near Kimpitiriki, 400 meters, *Killip & Smith 22942*.—Loreto: Pumayacu, *Klug 3160; 3193* (det. Standl.). Cachipuerto, *Klug 3132* (det. Standl.). Florida, *Klug 2184* (det. Standl.). Caballo-Cocha, *Williams 2436*. Pongo de Manseriche, *Tessmann 4256*. Marañón region, *Tessmann 4208*.—Puno: San Gabán, *Lechler 2514* (cf. *C. fasciculata*).—Río Acre: *Ule 9631; Krukoff 5583; 5239; 5386; 5233*. Lower altitudes, warm America. "Sishi-co-ey" (Huitoto).

Casearia tarapotina Pilger, Verh. Bot. Ver. Brandenb. 47: 161. 1905.

Branchlets glabrous; leaves elliptic, shortly acute at base or rounded, more or less acuminately and acutely pointed, obsoletely denticulate, 8–10 cm. long, 3–4 cm. wide, pellucid-punctate and

lineolate, the 8–9 lateral nerves prominent beneath; umbels axillary; pedicels puberulent, 5–7 mm. long; calyx lobes broadly lanceolate, obtuse, 4 mm. long, little puberulent; stamens free, unequal, 5 nearly equal, 5 longer than the villous disk lobes; anther ovoid, glabrous; ovary glabrous, the style villous below; fruit (as to specimens cited) about 6 mm. in diameter, nearly mature.—Section *Pituma* (Pilger). F.M. Neg. 13691.

San Martín: Tarapoto, *Ule 6936*, type; *Williams 6096* (fr. strigose at tip, 5 mm. long, 7 mm. thick); *6723; 6590.* Lamas, *Williams 6403*.—Loreto: Ucayali region, *Tessmann 3061*. "Tambor huactana."

17. LAETIA Loefl.

Shrubs or trees with entire or toothed opaque or punctate leaves, deciduous stipules and rather large hermaphrodite flowers in terminal or axillary cymes or clusters. Bractlets sometimes united. Sepals free or nearly so, 4–5, somewhat petaloid. Petals none. Stamens 10–15 or many, hypogynous or the outer somewhat perigynous, the filaments free, the anthers oblong-ovoid, tiny. Disk lacking or not marked. Ovary free, 1-celled with 3 placentae. Style lacking, simple or 3-parted. Capsule berry-like, dehiscent, the seeds imbedded in fleshy arils.—Name conserved as of Loefling but original publication, Loefling, Iter Hispan. 190. 1758 (German ed. 252) is only by inference and the name is scarcely noticeable on the page because it is in small type in synonomy under the name *Guidonia* P. Br., this in conspicuous letters. In the German edition both names are in the same size of type, but *Laetia apetala* is in parentheses.

Flowers glabrous or nearly so; leaves membranous or firm.

Flowers in clusters on the stems.

Flower clusters mostly or all axillary.....*L. suaveolens.*

Flower clusters mostly or all extra-axillary.....*L. procera.*

Flowers in dichotomous or simple cymes.

Leaves short-acuminate or acutish, 6–9 cm. long..*L. corymbulosa.*

Leaves blunt, mostly about 4 cm. long.....*L. apetala.*

Flowers pubescent; leaves heavy coriaceous.

Leaves oblong; "cup" subsessile, to 5 mm. long.....*L. coriacea.*

Leaves oval; "cup" pedicellate, 2.5–3 mm. long....*L. ovalifolia.*

Laetia apetala Jacq. Sel. Stirp. Amer. 167. *pl. 108.* 1763.

Similar to *L. corymbulosa* but the leaves more uniformly obovate, rounded or blunt at apex and the cymes simple or 2-dichotomous,

sometimes puberulent.—Probably only one species is concerned that is variable in these apparent differences.

Loreto: Region of the Ucayali, *Tessmann 3225; 3405*. Brazil to Colombia.

Laetia coriacea Spruce ex Benth. Journ. Linn. Soc. Bot. 5: Suppl. 2: 84. 1861.

Leaves rigid coriaceous and extremely lustrous both sides, oblong-elliptic, rounded at base, shortly acuminate, about 14 cm. long, 5–6.5 cm. wide, probably becoming larger, wavy margined; petioles 6 mm. long; sepals about 5 mm. long; bractlets united into a deeply bilobed cup 5 mm. long, this sessile or subsessile, the pedicels to 7 mm. long; young fruit globose, densely tomentose.—*L. cupulata* Spruce, l.c., Amazonian, is similar but the pedicels are more than twice as long as the entire cup. F.M. Neg. 24071.

Loreto: Iquitos, *Kuhlmann 19343* (det. Kuhlm.). Brazil; Venezuela.

Laetia corymbulosa Spruce ex Benth. l.c. 83.

Tree with oblong-elliptic-obovate leaves and small flowers borne laxly in 2–4 dichotomous cymes at the ends of short branchlets; petioles 4–7 mm. long; leaves membranous, glabrous, minutely and obscurely serrulate, pellucid punctate, slightly cordate and unequal at base, rounded or shortly acuminate at apex, 5–9 cm. long, 2.5–4 cm. wide; cymes to 4 cm. long; pedicels 1 cm. long, the minute bractlets more or less puberulent.—The variety *floribunda* (Spruce) Eichler has corymbs to 20-flowered, even 4-times dichotomous. The following collection (Mexia) was distributed as "*Banara laxiflora*." The collector noted it as a tree 40 meters high, growing higher, common, the wood used for firewood. It is perhaps a variety of *L. apetala*. F.M. Negs. 6511; 34869 (var.).

Loreto: Left bank of Río Marañón above Rancho Indiana, *Mexia 6404*. Brazil. "Teareo."

Laetia ovalifolia Macbr. Candollea 5: 389. 1934.

Branchlets smooth; petioles strongly sulcate, 13 mm. long; leaves broadly elliptic or rotund-elliptic, sometimes 2 dm. long, 1 dm. wide, but mostly 10–12 cm. long, 6.5–8 cm. wide, rounded at base, abruptly and shortly acuminate, coriaceous, lustrous, especially above, conspicuously reticulate-veiny on both sides, the 5 lateral nerves prominent; fascicles sometimes extra-axillary, often 8–10-flowered; bracteal cup on pedicel 1 mm. long, glabrous, irregu-

larly lobed, 2.5–3 mm. long; pedicels as the sepals, silky, ashy-pilose without, both 8–9 mm. long; sepals strongly reflexed, puberulent within, oblong, about 5 mm. long; style trifid at tip, about 6 mm. long; ovary densely rusty-pilose.—Flowers of the type noted as white and rose color; of *656* as white, dark green and red; a tree to 15 meters high.

Loreto: Mishuyacu near Iquitos, *Klug 757*, type; *656; 814*.

Laetia procera (Poepp. & Endl.) Eichler, Mart. Fl. Bras. 13, pt. 1: 453. 1871. *Samyda procera* Poepp. & Endl. Nov. & Gen. & Sp. 3: 67. 1845.

Sometimes a tall tree; petioles 7–15 mm. long; leaves elliptic-oblong, 10 cm. long, 4 cm. wide, sometimes much longer, little wider, minutely cordate at base, abruptly short-acuminate, minutely appressed denticulate, finely reticulate-veined on both sides, scarcely lustrous, pellucid-punctate; fascicles usually 15–30-flowered, the pedicels about as long as the petioles; sepals greenish-white, obtuse, reflexing, 3–4 mm. long; stamens 12–20; fruit 1.5–2 cm. thick, subglobose, with foveolate seeds about 3 mm. long.—To 40 meters high. Flowers without odor (Poeppig). F.M. Neg. 24073.

Loreto: Mishuyacu, *Klug 495*. Brazil to Guiana and West Indies.

Laetia suaveolens (Poepp. & Endl.) Benth. Journ. Linn. Soc. 5: Suppl. 2: 85. 1861. *Samyda suaveolens* Poepp. & Endl. Nov. Gen. & Sp. 3: 66. *pl. 274*. 1845.

Similar to *L. procera* but leaves obtuse or acutish at base, heavier, densely reticulate-veined, rather lustrous; flowers fewer (4–12), the stamens only 10–12 and of diverse lengths; capsules 2 cm. thick or larger, the seeds in a red pulp, smooth.—Flowers with the fragrance of orange blossoms (Poeppig). F.M. Neg. 13636.

Loreto: Iquitos, *Tessmann 3684; Klug 461; 1443*. Brazil. "Timarehua."

LACISTEMACEAE

By Charles Baehni

A small family of two genera and 20-odd species distributed in the New World from Mexico and the West Indies to Peru and Paraguay. The flowers are very small, so small that the characters used to recognize one species from the next can only be found by using a lens. We were of the opinion that good and reliable charac-

ters could be found in the flowers alone; study of ample material has indeed revealed that there exists a variability in these small flowers which could easily justify a splitting of species such as has been done in *Rosa*, *Rubus*, and other similar genera. Fortunately, fairly stable combinations of characters permit a more conservative treatment of this family; we cannot help feeling, however, that the limits being here difficult to trace, the circumscription of species is rather a matter of appreciation.

There is no known use of any Lacistemaceae.

Flowers borne on pedicels; inflorescence raceme-like.....1. *Lozania*.
Flowers sessile; inflorescence catkin-like.....2. *Lacistema*.

1. LOZANIA [Sinf.] Mutis

Reference: L. B. Smith, Phytologia 1: 138. 1935.

Inflorescences raceme-like, each flower borne on a distinct pedicel. Basal bract small. Sepals 4, broad, connate at base. Petals absent. Stamen 1, 6 ovules in the unilocular ovary. Fruit, the size of a pea, opening from the apex in 3 valves.

Lozania Klugii Mansf. Notizbl. Bot. Gart. Berlin 11: 596. 1932. *Monandrodendron Klugii* Mansf. Repert. Sp. Nov. 30: 178. 1932.

Small tree (6 meters); leaves 6–11 cm. long, 2–3 cm. broad, oblong-elliptic, acuminate, cuneate at base, denticulate, covered with appressed hairs; petiole 0.2–0.3 cm. long; stipule 0.4 cm. long; inflorescence racemose, 2.5 cm. long; flowers yellow-green; stamen longer than ovary; anther cells vertically disposed; ovary glabrous; style extremely short; capsules pilose, the seed bright orange color.

San Martín: Pongo de Cainarachi, *Klug 2711; 2681.*—Loreto: Mishuyacu near Iquitos, *Klug 1430.* Florida, Río Putumayo, mouth of Río Zubineta, *Klug 2297.* Pumayacu, *Klug 3250.* Colombia.

Lozania Mutisiana Roem. & Schult. Mant. Add. 1: 75. 1822. *L. nemoralis* DC. Prodr. 3: 30. 1828. *Monandrodendron Schultzei* Mansf. Notizbl. Bot. Gart. Berlin 10: 860. 1929. *M. peruvianum* Mansf. Repert. Sp. Nov. 29: 161. 1931.

Small tree or tree 6–20 meters high; leaves 8–13 cm. long, 2.5–3 cm. broad, ovate to elongate-elliptic or even lanceolate, acute or acuminate, cuneate or rounded at base, glabrous beneath or puberulous or covered with a felt-like indument; petiole 0.8–1.2 cm. long, the rest as in the genus; stamen and ovary subequal; anther cells horizontally disposed; indument of ovary variable.—The variability

of this species is so great that it may be found later to include *L. Klugii*.

Junín: Pichis Trail, San Nicolas, *Killip & Smith 25968*.—Loreto: Pumayacu, *Klug 3204*. Florida, *Klug 1976*.—San Martín: Pongo de Cainarachi, *Klug 2694*. Venezuela; Colombia.

2. LACISTEMA Swartz

Flowers sessile, disposed in spikes looking like catkins. Basal bract large, enclosing the whole flower. Sepals free, often wanting. Petals absent. Stamen 1. Ovules 3–6. Fruits like those of *Lozania*.

Disk large, not completely hidden by the protective bract.

Leaves large, 20–35 cm. long ..... *L. Macbridii*.

Leaves much smaller.

Sepal 1 ..... *L. rosidiscum*.

Sepals 4.

Leaves pilose on the middle nerve beneath ..... *L. nena*.

Leaves entirely glabrous ..... *L. aggregatum*.

Disk narrow, hidden by the protective bract.

Sepals 2–3 ..... *L. purpureum*.

Sepals 4, rarely 3.

Leaves glabrous below, generally shallowly serrate. *L. aggregatum*.

Leaves pubescent below, entire.

Petioles very short (2–2.5 mm.) ..... *L. curtum*.

Petioles long (5 mm. and more).

Sepals broadly ovate ..... *L. Poeppigii*.

Sepals oblong-lanceolate ..... *L. Weberbaueri*.

Lacistema aggregatum (Berg.) Rusby, Bull. N. Y. Bot. Gard. 4: 447. 1907. *Piper aggregatum* Berg. Act. Hebr. 7: 131. *pl. 10*. 1777. *L. myricoides* Sw. Prodr. 12. 1788. *L. bolivianum* Gandoger, Bull. Soc. Bot. Fr. 66: 288. 1919.

Bush or small tree, up to 12 meters high; leaves mostly entire or merely undulate but sometimes repando-dentate or even serrulate, elliptic, acute or acuminate, glabrous, variable in size (7–18 cm. long, 2.5–7 cm. broad); flowers cream-colored; spikes longer than the petioles (up to 12 mm.); sepals 4, lanceolate, serrulate; disk variable in size and shape, but generally membranous and reddish on dried specimens, more often small and hidden by the

bract than large and conspicuous; fruit ellipsoid, glabrous, 6–8 mm. long, brownish-red when ripe.

Loreto: Iquitos, Río Napo, near Mazán, *Mexia 6446;* basin of Marañón, *Tessmann 5340.* Florida, Río Putumayo, at mouth of Río Zubineta, *Klug 2180, 2239.*—Huánuco: Lower Río Huallaga, *Williams 4680;* above Cayumba, *Mexia 8308.*—Junín: Hacienda Schunke, *5804* (det. Killip). From Mexico to Peru; West Indies. "Sishi-co-ey" (Huitoto), "huacapurana," "trompo huayo," "palometa huayo."

Lacistema curtum Macbr. Candollea 5: 393. 1934.

Tree 5 meters high; leaves conspicuously pilose on the nerves below and on the petioles, glabrous above, entire, caudate-acuminate at tip, acute at base, oblong-elliptic, 7–14 cm. long, 2.5–4.5 cm. broad; stipule caducous; spikes shorter than the petioles (less than 2.5 mm.); bracts broadly triangular, slightly acute, finely toothed at margin, hirsute-pilose at base alone; sepals 4, oblong-lanceolate, acute, very thin, more or less dilacerated.

Junín: Above San Ramón, 1,400–1,700 meters, *Killip & Smith 24617,* type.

Lacistema Macbridii Baehni, Candollea 8: 42. 1940.

Leaves remarkably large (to 35 cm. long, 12 cm. broad), entire, acuminate, acute at the base, with short petioles (0.5–10 mm. long), entirely glabrous; spike (only one seen) 1.5 cm. long; bracts ciliate; sepals 4, ovate, denticulate or irregularly lacerate at the tip; disk very large, unlobed, uncleft, somewhat triangular; fruit unknown.

Loreto: Iquitos, Basin of Marañón, between Iquitos and mouth of Santiago at Pongo de Manseriche, *Tessmann 5282,* type.

Lacistema nena Macbr. Candollea 5: 392. 1934.

Twigs slender, pilose but becoming glabrous; petiole 4–5 mm. long, slightly pilose; leaves entire, acuminate, glabrous beneath except on the middle and lateral nerves, 14 cm. long and 4 cm. broad; spikes about 1 cm. long, with acute bracts; sepals 4, obscurely denticulate; disk conspicuously large, not lobed; fruit sessile, densely covered with grayish hairs.

Loreto: Caballo-Cocha, on the Amazon, *Williams 2154;* Pebas on the Amazon, *Williams 1876,* type. Amazonas: Basin of Marañón, mouth of Santiago at Pongo de Manseriche, *Tessmann 4323.* "Nena," "huacapurana."

Lacistema Poeppigii A. DC. Prodr. 16, pt. 2: 593. 1868.

Leaves elliptic or oblong, acuminate, glabrous above, slightly appressed-pubescent below, 6–12 cm. long, 2.5–3.5 cm. broad; petioles 5 mm. long, spikes about the same length; sepals 4, broadly obovate, now and then dentate; disk sublobate, remarkably narrow; fruit 8–16 mm. long, shortly stipitate.—F.M. Neg. 8075.

Maynas: *Poeppig*, type.

Lacistema purpureum (R. & P.) A. DC. Prodr. 16, pt. 2: 593. 1868. *Synzyganthera purpurea* R. & P. Syst. 1: 273. 1798.

Twigs glabrous; leaves elliptic or oblong-lanceolate, entire or remotely subdenticulate, glabrous except below on the nerves, 8–10 cm. long and 2.5–4 cm. broad; spikes about the same length as the petioles (5–7 mm.); sepals 2–3; disk split, indistinctly lobed; fruit glabrous, about 12 mm. long.

Huánuco: "Muña et Pillao," near Chacahuassi, *Ruiz & Pavón 513*.

Lacistema rosidiscum Macbr. Candollea 5: 392. 1934.

Small tree; leaves oblong-elliptic or even lanceolate, 8 cm. long and 2.5–3.5 cm. broad, glabrous above and slightly shining, dull below and glabrous also but sometimes pilose, especially on the nerves; stipules lanceolate, caducous; spikes 3–5 mm. long, shorter than the petioles; disk of flower large, pink, deeply split and irregularly undulate; 1 sepal narrowly oblong.—*Williams 6721* has narrower leaves than the type (2.5 cm.).

San Martín: Tarapoto, *Williams 7216*, type; *Williams 6721*.

Lacistema Weberbaueri Baehni, Candollea 8: 46. 1940.

Leaves much like those of *L. Poeppigii*, elliptic, shallowly serrate, acuminate or even caudate, acute at base, with long appressed hairs on the nerves below, 6–8 cm. long, 2.5–3 cm. broad; petiole slender, 5–7 mm. long; stipules caducous, 6–7 mm. long, covered on the middle of the back with more or less stiff yellow hairs; spikes up to 18 mm. long; flower completely hidden by bract; sepals 3–4, lanceolate or linear, very rarely dentate on one side; disk narrow, slightly cleft; fruit ovoid, glabrous, stipitate.

Loreto: Moyobamba, *Weberbauer 4497*, type.

VIOLACEAE. Violet Family

By Charles Baehni and R. Weibel

Reference: Gingins in DC. Prodr. 1: 287–316. 1824.

Although the family is a very natural one, it is usually easy to distinguish one genus from the others, because of striking characters

readily discernible in the flowers or in the fruits. There is only one genus which has been accepted here with some doubt: the genus *Rinoreocarpus*. The characters indicated by its author, Ducke, are beyond doubt of value to the field taxonomist; for the herbarium-worker, it seems difficult to separate it from *Rinorea*. The Andean species of *Viola* need revision. However, the material at our disposal was insufficient to alter the accepted limits; it is to be hoped that, when foreign exchanges are possible, someone will undertake such a revision.

The fruit of *Leonia glycycarpa* R. & P. is edible; the roots of *Corynostylis*, *Viola*, and *Hybanthus* yield an emetic; those of *Anchietea* (source of Anchietin) furnish a liniment. Otherwise, besides being agreeable as ornamental plants, Violaceae are of little use to man.

Fruit a berry or a capsule.
- Flowers regular (actinomorphous) or slightly irregular; petals not spurred nor saccate.
  - Flowers regular.
    - Fruit a capsule.
      - Connective dilated dorsally into a large appendage. 1. *Rinorea*.
      - Connective expanded into a small apical scale. 2. *Rinoreocarpus*.
    - Fruit a berry ..... 3. *Gloeospermum*.
  - Flowers slightly irregular (petals not all same size).
    - Filaments completely united ..... 4. *Paypayrola*.
    - Filaments united at the base only ..... 5. *Amphirrhox*.
- Flowers irregular (zygomorphous); 1 petal spurred or saccate.
  - Capsule woody ..... 7. *Corynostylis*.
  - Capsule not woody.
    - Foremost petal saccate, not spurred ..... 6. *Hybanthus*.
    - Foremost petal spurred.
      - Capsule wrapped in the remnants of calyx and corolla; half-shrub mostly unramified ..... 10. *Noisettia*.
      - Capsule not as above; habit variable.
        - Capsule inflated; seeds winged or ridged (exception: *A. Raimondi* with half-spherical seeds) 8. *Anchietea*.
        - Capsule 3-carinate, not inflated; seeds not winged, ovoid or spherical ..... 9. *Viola*.

Fruit nut-like ..... 11. *Leonia*.

1. RINOREA Aubl.

Reference: Blake, Contr. U. S. Nat. Herb. 20: 491–518. 1924.

Shrubs or trees with apparently opposite leaves (Peruvian species) axillary or sometimes terminal racemes of small white or yellowish flowers (exception: *R. micrantha*). Flowers regular, with 5 free petals and 3-valved capsules. Stamens entirely free, connectives dilated dorsally from base to apex into scarious brownish scales exceeding the anthers and free from them laterally and apically. Each filament (Peruvian species) is adnate outside at the base or throughout its length to a gland, which is sometimes longer than the filament and is (usually) free at apex.—One species, *R. paniculata* (Mart.) Kuntze, 498, with alternate leaves, has been collected in the Amazonian region and may be expected. We have found the descriptions by Blake concise and complete and they have been largely used by us. Williams has noted the name "yurac varilla" for some species.

Style in adult flowers straight or bent at summit; flowers about 3 mm. long or longer.

Ovary and style well-defined, the latter exactly straight; flowers pedicellate.

Ovary glabrous or with hairs..... *R. flavescens.*

Ovary densely pubescent.

Anthers 1–2 cuspidate or 2–4-setose apically.

Petals pubescent..... *R. Passoura.*

Petals glabrous..... *R. falcata.*

Anthers not appendaged apically.

Leaves mostly about 5 cm. long; racemes 2–3 cm. long. *R. juruana.*

Leaves mostly about 8 cm. long; racemes 3.5–6 cm. long. *R. viridifolia.*

Ovary and style merging, the latter broad and bent to one side at tip; flowers subsessile or in cymules.

Ovary villous; racemes spike-like..... *R. macrocarpa.*

Ovary glabrous; panicles spike-like..... *R. racemosa.*

Style (in adult flowers) sigmoid in form; flowers (Peruvian) scarcely 2 mm. long (or longer, form)..... *R. Lindeniana.*

Rinorea falcata (Mart.) Kuntze, Rev. Gen. Pl. 1, pt. 1: 42. 1891; 511. *Alsodeia falcata* Mart. ex Eichler in Mart. Fl. Bras. 13, pt. 1: 386. 1871.

Similar to *R. Passoura;* pedicels about 3 mm. long, reflexing; petals to 4 mm. long, glabrous; anthers bicuspidate; capsules 2 cm. long, glabrate, the seeds glabrous. The Peruvian collection, apparently referable here, has white flowers only 3.5 mm. long.

Loreto: San Antonio on Río Itaya, *Killip & Smith 29417* (det. F. M.). Brazil.

Rinorea flavescens (Aubl.) Kuntze, Rev. Gen. Pl. 1, pt. 1: 42. 1891; 507. *Conohoria flavescens* Aubl. Pl. Guian. 1: 239. *pl. 95.* 1775.

Shrub or slender tree to 7 meters; petioles 3–7 mm. long, pubescent like the branchlets; blades obovate to oval, 7–20 cm. long, 2.2–8 cm. broad, shortly acuminate, at base cuneate to rounded, obsoletely crenate-serrulate or subentire, glabrous or pubescent on the veins above and beneath; racemes about 7 cm. long, finely spreading, puberulous; pedicels 2–4 mm. long; sepals oval or ovate, rounded or obtuse; petals oblong-lanceolate to elliptic-ovate, yellow, 4.2–4.5 mm. long, obtusish, with recurved and very sparsely hispidulous apex, otherwise glabrous; filaments equaling or exceeding the deltoid tridenticulate gland, this adnate for half its length or more, anthers not appendaged, connective scales oblong-ovate, obtuse; ovary most generally glabrous; capsule 2–2.5 cm. long, usually 2-seeded; seeds glabrous.—Illustrated, Aubl. Pl. Guian. *pl. 95.*

Loreto: Yurimaguas (*Poeppig, 2324 B*); *2137.* Mishuyacu near Iquitos, *Klug 263; 693; 818; 843; 1362; Killip & Smith 29981.* Brazil to Guianas.

Rinorea juruana Ule, Verh. Bot. Ver. Brandenb. 47: 158. 1905; 514.

Shrub or tree, 3–10 meters high; blades obovate or oblong, 4–6 cm. long, 2–2.5 cm. broad, acuminate, obtuse at apex, minutely subspinulose-serrate, short pubescent on the veins, especially above; racemes 2–3 cm. long, few-flowered, puberulous, the pedicels 3 mm. long; bracts lanceolate, acute; sepals broad-elliptic; petals oblong-obovate, whitish yellow, 4–5 mm. long; filaments strongly thickened, the connective scales ovate, entire, twice as long as the anthers; ovary densely hairy; capsule trigonous, 15 mm. long, acuminate, sparsely pilose; seeds solitary in each valve, glabrous, 6 mm. thick. —*R. scandens* Ule, l.c. 157, has larger leaves, 10–20 cm. long. Without locality, fide Melchior in Engler & Prantl, Pflanzenfam. ed. 2. 21: 352. 1925 (determinations, F. M.). F.M. Neg. 24062.

Loreto: Santa Rosa, below Yurimaguas, *Killip & Smith 8898; Williams 4865.* Puerto Arturo, *Williams 5210; 5088.* Recreo, *Wil-*

liams 4127. Alto Río Itaya, *Williams 3244.* Brazil; Bolivia. "Virote quiro."

Rinorea Lindeniana (Tul.) Kuntze, Rev. Gen. 1, pt. 1: 42. 1891; 503. *Alsodeia Lindeniana* Tul. Ann. Sci. Nat. sér. 3. 7: 364. 1847. *A. guianensis* var. *Lindeniana* Eichl. in Mart. Fl. Bras. 13, pt. 1: 387. 1871. *Rinorea micrantha* Ule, Verh. Bot. Ver. Brandenb. 47: 157. 1905; fide Melchior, Notizbl. Bot. Gart. Berlin 10: 546. 1929.

Shrub or tree, 3–15 meters high; leaves elliptic-oblong, 13–15 cm. long, 5–7 cm. broad, long-acuminate, usually slightly cordate at the oblique base, crenulate or serrulate, glabrous; panicles racemiform, 9 cm. long, the axis puberulent to glabrate, the lower branchlets about 4-flowered; sepals elliptic; petals greenish white (Killip) or yellowish (Mexia), ovate-elliptic; filaments bearing a subulate gland at base, the connective scales ovate, erose, nearly twice as long as the anthers; ovary densely pilose, style S-shaped in adult flowers only.—The type is *Ule 5477* from Río Jurua, Bocca do Tejo, Brazil. F.M. Negs. 24064; 32167; 28286 (*R. micrantha*).

Loreto: Above Pongo de Manseriche, hills on left bank of Río Marañón, in dense forest, alt. 250 meters, *Mexia 6346.* Florida, *Tessmann 4630;* Río Putumayo at mouth of Río Zubineta, forest, alt. 180 meters, *Klug 2173.* San Antonio, *Killip & Smith 29298.* Soledad, *Killip & Smith 29630.* San Antonio, Río Itaya, *Killip & Smith 29342; 29459.* Near Iquitos, *Klug 629.* Río Mazán, *Schunke 148.*—Río Acre: Cobija, *Ule 9621.* Brazil; Bolivia. "Pantui" (Aquaruna), "limonsacha," "gopeña-go ey" (Huitoto).

Rinorea macrocarpa Kuntze, Rev. Gen. 1, pt. 1: 42. 1891; 514. *Alsodeia macrocarpa* Mart. ex Eichl. in Mart. Fl. Bras. 13, pt. 1: 385. *pl. 78.* 1871.

Tree or shrub 3–9 meters high; leaves oval or obovate-oval, 10–20 cm. long, 5–8 cm. broad, short-pointed, acute at base, membranaceous, repand-serrate, at first puberulous, quickly glabrate; racemes spiciform, 4–6 cm. long, yellowish-puberulous, the flowers subsessile; sepals ovate-oblong; petals oblong-lanceolate, obtuse, glabrous, revolute at apex; stamens scarcely shorter than the petals, the filaments nearly as long as the anthers, apparently not gland-bearing, the dorsal connective scales scarcely once and a half as long as cells; ovary villous, merging with the style, the latter broad and bent to one side at tip; capsule acute, 4–5 cm. long, at length glabrate, the valves 2-seeded, the seeds glabrous.

Loreto: Leticia, *Ule 6192.* Surinam; Amazonian Brazil.

Rinorea Passoura Kuntze, Rev. Gen. 1, pt. 1: 42. 1891; 507. *Passoura guianensis* Aubl. Pl. Guian. 2: Suppl.: 21. *pl. 380.* 1775. *Conohoria Passoura* DC. Prodr. 1: 312. 1824, in part. *Alsodeia guianensis* Eichl. in Mart. Fl. Bras. 13, pt. 1: 387. 1871.

Leaves oval to elliptic, 8–17.5 cm. long, 3–7 cm. broad, short-pointed to acuminate, at base rounded to cuneate, obscurely crenate-serrulate or subentire, pubescent; racemes 3.5 to 10 cm. long, densely ferrugineous-puberulous, the pedicels about 5 mm. long; sepals broadly ovate, obtusish, strongly several-ribbed; petals oval-oblong, white or yellow, obtuse, pilose along midline with erect rufidulous hairs; filaments equaling or exceeding the oblong gland, which is free above the middle, anthers 1- or 2-cuspidate or 2- to 4-setose at apex, connective scales oblong-ovate, obtuse, obscurely erose; ovary densely hispid-pilose, style straight; capsule 2 to 3 cm. long, tomentose, glabrate; seeds 3 to each placenta, velvety-tomentose.—*R. camptoneura* (Radlk.) Melchior in Engl. & Prantl, Pflanzenfam. ed. 2. 21: 352. 1925, Amazonian, has membranous appendices on the anthers. *R. falcata* (Mart.) Kuntze, which would be sought here, has glabrous petals.—Shrub or tree to 8 meters; wood tough (Mexia); flowers cream and violet (Klug).

Junín: Along Río Perené, *Killip & Smith 25154* (det. Standl.).—San Martín: Juanjuí, 400 meters, *Klug 3802* (det. Standl.). Chazuta, *Klug 4081* (det. Standl.).—Loreto: Lower basin of Ucayali, *Tessmann 3441; 3162.* Fortaleza, near Yurimaguas, 140 meters, in forest, *Klug 2787; Mexia 6082; Killip & Smith 28288; 27558; 28825* (only Klug spec. det. Baehni). Puerto Arturo, *Killip & Smith 27785; 27727* (det. Standl.). Soledad on Río Itaya, *Killip & Smith 29795* (det. Standl.). Mishuyacu near Iquitos, *Killip & Smith 29930.*—Río Acre: Seringal Auristella, *Ule 9620.* Guianas; Amazonian Brazil. "Canella de Jacamin," "lluichovaran-dilla."

Rinorea racemosa (Mart. & Zucc.) Kuntze, Rev. Gen. 1, pt. 1: 42. 1891; 502. *Alsodeia racemosa* Mart. Nov. Gen. & Sp. 1: 29. *pl. 20.* 1823.

Similar to *R. macrocarpa*, but leaves often merely repand-margined, the panicles raceme-like, usually 2 cm. long or longer, the cymules with several flowers; petals lightly puberulent, 2.5 mm. long or longer, well-exceeding the stamens; capsule about 8 mm. long.—Flowers greenish yellow (Killip & Smith); orange (Klug). Determinations by Melchior.

Huánuco: Puerto Lira, 300 meters, in dense forest along Río Pachitea, *Killip & Smith 26832.*—Loreto: Río Itaya, *Williams 61.*

Upper Río Nanay, *Williams 3195*. Mishuyacu near Iquitos, *Klug 504*. —Río Acre: Near mouth of Río Macuahan, *Krukoff 5391*. Brazil. "Majaras caspi" (Inca).

Rinorea viridifolia Rusby, Mem. Torrey Club 6: 5. 1896; 514.

Leaves obovate or oblong-obovate, 6–11.5 cm. long, 2–4.5 cm. broad, obtusely acuminate or short-pointed at base, cuneate or rounded-cuneate, crenate-serrulate, puberulous on main nerve above, sparsely strigose at base beneath or glabrous; racemes 3.5–6 cm. long (8 cm., *Tessmann 5281*), sparsely and obscurely puberulous; pedicels 2.5–3.5 mm. long; bracts scarious, broadly ovate, keeled; sepals oval-ovate, obtuse or acutish; petals elliptic, obtuse, slightly reflexed, ciliolate at base and apex; filaments stout, somewhat exceeding the emarginate sparsely puberulous gland, nearly as long as anther cells, the anthers unappendaged, the connective scales oblong-ovate, obtuse, distinctly erose especially below the middle; ovary densely hispid-pilose, style straight.—*R. brevipes* Blake, 512 (*R. laxiflora* Melchior in Engl. & Prantl, Pflanzenfam. ed. 2. 21: 352. 1925, *Alsodeia brevipes* Benth. in Hook. Journ. Bot. 4: 106. 1842, *A. laxiflora* Benth. l.c. 107, syn. after Blake) has also nearly glabrous petals, the filaments less than one-half as long as the anther cells (*R. viridifolia* filaments as long as anther cells).

Loreto: Ucayali, *Tessmann 3199*. La Victoria, *Williams 2961; 2712*. Basin of Marañón between Iquitos and mouth of Santiago at Pongo de Manseriche, *Tessmann 5281*.—Río Acre: Cobija, *Ule 9619;* Seringal San Francisco, *Ule 9613*. Bolivia.

2. RINOREOCARPUS Ducke

Reference: Ducke, Archiv. Jard. Bot. Rio Jan. 4: 144. 1925.

Genus related to *Rinorea*, of which it has the capsules, the free petals and the free stamens. However, it can be recognized at once owing to the dichasial cymes and its anthers without a dorsal scale produced into a short terminal appendix.

Rinoreocarpus Ulei (Melchior) Ducke, Archiv. Jard. Bot. Rio Jan. 5: 173. 1930. *R. salmoneus* Ducke, l.c. 4: 144. *pl. 13*. 1925. *Gloeospermum Ulei* Melchior, Notizbl. Bot. Gart. Berlin 9: 164. 1924.

Shrub or tree to 12 meters high, the young parts covered with an evanescent velvety pubescence; leaves obovate, almost glabrous, 10–16 cm. long, 3–7 cm. broad, shortly acuminate, remotely and irregularly serrate, slightly shining above; stipules early caducous; flowers salmon-colored, to yellow or orange, about 5 mm. long, almost

sessile, with a very short staminal tube (one-fourth of the filament), the edge of which is straight; appendix of connective short, foremost petal alone plicate; style straight, about twice as long as the glabrous ovary; capsules 2–3 cm. long, early orange-yellow later black, rather obsoletely transverse-reticulately rugose, the seeds obovate, 6 mm. long, lustrous, minutely black-punctate.—Cf. Williams, Field Mus. Bot. 15: 348. 1936, under *Gloeospermum Sprucei* Eichl. F.M. Neg. 24056.

San Martín: Pongo de Cainarachi, *Klug 2727*.—Loreto: Pebas, *Williams 1935*. Iquitos, *Williams 3638*. Yurimaguas, *Killip & Smith 29058*. Florida, *Klug 2287*. Brazil.

3. GLOEOSPERMUM Trian. & Planch.

Reference: Melchior, Notizbl. Bot. Gart. Berlin 9: 163–167. 1924.

Trees and shrubs with distichous, short-petioled and slightly toothed leaves. Flowers 2 or 3 at a time, regular, small, greenish or reddish, the scorpioid cymes axillary. Filaments united at the base with a staminal tube which is in some species as long, in some others half as long as the stamens. Tip of connective produced into a long membranous appendix sometimes as long as the anthers. Fruit a berry.

Leaves glabrous beneath ..... *G. sphaerocarpum.*
Leaves densely pilose ..... *G. pilosum.*

Gloeospermum pilosum Melchior, Notizbl. Bot. Gart. Berlin 8: 623. 1923. *G. peruviana* Melchior, nomen nudum in Engl. & Prantl, Pflanzenfam. ed. 2. 21: 354. 1925. *Achras globosa* R. & P. Fl. Peruv. 4: *pl. 425*. 1802, fide Melchior.

Very similar to *G. sphaerocarpum*, from which it is readily distinguished by the short and dense pubescence of the branchlets, undersurface of leaves and sepals.—After Melchior, l.c. 9: 164. 1924, *G. pilosum* can be readily distinguished from *G. sphaerocarpum* by the staminal tube which almost equals the filament in the former, and is only one-half or three-fourths as long in the latter. From observations made in Herb. Delessert, we are inclined to doubt whether these proportions hold true; it would seem then that, the pubescence being the only certain character to be relied upon, *G. pilosum* could be considered as a mere var. of *G. sphaerocarpum*. The plate with this number in some copies of R. & P., vol. 4 is not this plant. F.M. Neg. 24055.

San Martín: Uchiza (*Tafalla* in 1798, type); in Herb. Delessert as "*Achras globosa* sp. n. M. Pavón."

Gloeospermum sphaerocarpum Triana & Planch. Ann. Sci. Nat. sér. 4. 17: 129. 1862; 167.

Shrub, perhaps tree, entirely glabrous; leaves lanceolate to oblong-lanceolate, shortly acuminate at the tip or acute at both ends, remotely serrate at the margin, 4–12 cm. long, 1–4 cm. broad, papyraceous, paler and conspicuously veined beneath; stipules very early caducous (only to be seen in the bud), linear-subulate, almost as long as the petiole (0.5 cm.); inflorescences only 0.5 cm. long; flowers small (3.5 mm. long), on short pedicels (1–2 mm.); free part of the petals short, spreading; tube of corolla thick; stamens about as long as the calyx, the margin of the staminal tube irregular; appendix of the stamens nearly as long as the lobes, membranaceous; ovary attenuated into a style 3 times as long as the stamens; stigma punctiform (description after Eichler).—The var. *latifolium* Melch. l.c. 8: 622, has broader leaves, 3–5 cm. wide, 5–13 cm. long; the flowers are the same. F.M. Negs. 24058; 24057. Illustrated, Mart. Fl. Bras. 13, pt. 1: *pl. 79.*

Loreto: Pongo de Manseriche, *Tessmann 4730.* Maynas, woods near Yurimaguas, *Poeppig 2088* (type of var.); *Williams 5256; 4955* (det. Melchior); *5086.* Near Iquitos, *Williams 8167* (det. Melchior). La Victoria, *Williams 3007?* (fruit only). Puerto Arturo, *Williams 5302?* (fruit only). Brazil; Colombia.

4. PAYPAYROLA Aubl.

Flowers only slightly zygomorphic. Claws of the petals wide, cohering into a long tube. Filaments united. Appendage of anthers very small.

Paypayrola grandiflora Tul. Ann. Sci. Nat. sér. 3. 7: 371. 1847.

Tree 5–7 meters high; leaves subopposite, borne at the end of the twigs, entire, 20–35 cm. long, 7–13 cm. broad; spikes terminal or axillary, the few yellow flowers themselves being sessile or shortly pedunculate; petals thick, forming an urn-shaped corolla, sometimes 2 cm. long; capsule shortly acuminate, 4 cm. long, glabrous.—Determinations (except as noted) by Melchior. Illustrated, Mart. Fl. Bras. 13, pt. 1: *pl. 76.*

San Martín: Pongo de Cainarachi, *Klug 2717* (det. Standl.).—Loreto: Pampa del Sacramento, (*Huber 1533*). Leticia, *Ule 6219.* Basin of Marañón, between Iquitos and mouth of Santiago at Pongo

de Manseriche, *Tessmann 5543*. Iquitos, *Williams 8016; Klug 46; 129; 526; Killip & Smith 27488*. Lower Río Huallaga, *Williams 3970; 4130; 4265; 4847*. Santa Rosa, *Killip & Smith 28764*. La Victoria, *Williams 2973*. Caballo-Cocha, *Williams 2012; 2079; 2359*. Brazil. "Caballo-cocha," "tornilla muena," "pegan-pegan."

5. **AMPHIRRHOX** Sprengel

With the character of *Paypayrola* but the filaments free except at base where united into a low ring and the anther appendage elongate.

Capsules to 3 cm. long, seeds 5–7 mm. long; leaves often obviously repand-denticulate.

Calyx teeth with a mucro below tip.....*A. juruana.*

Calyx teeth without mucro.....*A. latifolia.*

Capsules to 4 cm. long; seeds 10 mm. long or longer; leaves often entire or merely repand.

Leaves broadly obovate.....*A. Sprucei.*

Leaves nearly oblong-subelliptic or narrowly obovate.
A. surinamensis.

Amphirrhox juruana Ule, Verh. Bot. Ver. Brandenb. 47: 156. 1905.

Shrub to 3 meters; leaves dark green above, 12–18 cm. long, 4–5 cm. broad, oblong-lanceolate, cuspidate, remotely serrate; flowers yellowish-purple, about 1.5 cm. long, slightly zygomorphous in fascicles at the tip of branchlets, on long pedicels (1–4 cm.); sepals with a short point (mucro) on the back; petals free, yellowish-lilac, unguiculate; filaments united below; connective with appendage; style straight. Capsule 3.5 cm. long, half as broad, the light brown seeds 7 mm. long (Krukoff spec.).—F.M. Neg. 24066.

Río Acre: Upper Río Jurupary, *Krukoff 5229* ex char. Brazil.

Amphirrhox latifolia Mart. ex Eichler in Mart. Fl. Bras. 13, pt. 1: 376. 1871.

Tree, 15 meters tall or taller, with shortly petioled oblong-elliptic leaves acute at both ends or shortly acuminate, firm, membranous, veiny, concolor, obscurely or remotely repand-serrulate, mostly 12–15 cm. long, 5–7 cm. broad, or on young shoots 2 dm. long, half as wide; flowers 2–several fasciculate and as in *Amphirrhox juruana*, but roseate or white; calyx 3–4 mm. long, the sepals broadly ovate;

capsules about 2.5 cm. long, tuberculate; the obovoid lustrous seeds 6–7 mm. long.

Río Acre: Upper Río Macauhan, *Krukoff 5527*. Guianas; Brazil.

Amphirrhox Sprucei (Eichler) Macbr. comb. nov. *Gloeospermum Sprucei* Eichler in Mart. Fl. Bras. 13, pt. 1: 390. 1871.

Leaves obovate, narrowed to the petiole (this about 1 cm. long), subacutely and shortly pointed, reticulate-veiny, obsoletely repand or denticulate, slightly paler beneath, chartaceo-coriaceous, often 15 cm. long, half as wide; flowers apparently unknown; capsules ovoid-globose, irregularly and bluntly tuberculate, apiculate, at least 3 cm. in diameter, the light brown, smooth, subovoid seeds with yellowish testa, about 1.5 cm. long.—Melchior in herb. and in his revision of *Gloeospermum* referred this to *Amphirrhox* with (!). As I know nothing about the relationship, I hesitate to make him responsible for the transfer which, however, is necessary here because *Williams 3638* was at one time determined by Melchior as this species; cf. *Rinoreocarpus* (F.M.). Illustrated, l.c. *pl. 79*. F.M. Neg. 19148.

Peru? Brazil.

Amphirrhox surinamensis (Miq.) Eichler in Mart. Fl. Bras. 13, pt. 1: 377. 1871.

Leaves characteristically oblong-lanceolate, slightly obovate, rarely elliptic-membranous or subcoriaceous; flowers about as in *A. latifolia*, 1.5 cm. long, creamy-white or bluish; capsules smooth, subglobose, about 4 cm. in diameter; seeds 16–18 mm. long, similar to those of *A. Sprucei*. Miquel gave the name in herb. under another genus.

Loreto: Pebas, *Williams 1719* (det. Melchior). Mishuyacu near Iquitos, *Klug 1360*. Venezuela; Guianas.

6. HYBANTHUS Jacq.

Reference: G. K. Schulze, Bot. Jahrb. 67: 437–489. 1936.

Herbs, half-shrubs or rarely shrubs, the leaves alternate or the lower sometimes opposite. Flowers either solitary and axillary or in racemes, generally white or blue, the sepals free. Of the 5 free petals, one is much longer than the others and unguiculate. Stamens free. Connectives dorsally dilated from base to apex into scarious brownish scales exceeding the anthers and free from them laterally. Fruit a 3-valved capsule.

Flowers racemose; shrub..... *H. Sprucei.*
Flowers solitary; herbs or half-shrubs.
Stipules conspicuous, white scarious; leaves pubescent.
Leaves obovate, rounded at tip..... *H. tarapotinus.*
Leaves elliptic-lanceolate, acute..... *H. albus.*
Stipules minute or inconspicuous; leaves glabrescent.
Flowers 7–12 mm. long; annual herb..... *H. attenuatus.*
Flowers 3–4 mm. long; half-shrub..... *H. parviflorus.*

Hybanthus albus (St. Hil.) Baill. Bot. Médic. Phan. 2: 841. 1884; 475. *Ionidium album* St. Hil. Mém. Mus. Hist. Nat. Paris 11: 477. 1824.

Shrubby, the branches above and the leaves rather densely villous; stipules white-scarious in age, the younger scarious-margined; leaves alternate, 2.5–4 cm. long (or larger), more or less closely serrate; pedicels nearly filiform, 1.5–3 cm. long, mostly or all without bracts; calyx teeth subequal, entire foremost petal about 1.5 cm. long, the lateral somewhat, the others much shorter; filaments short, the two upper with a short spur; connective scale orange-brown; style more or less curved, weakly 2-lobed.—The Peruvian plant has rather more densely-serrate leaves and the lateral petals have not been seen; the determination therefore is not certain (F.M.).

Cuzco: At 650 meters, *C. Bues.* Southern Brazil; Uruguay; Argentina.

Hybanthus attenuatus G. K. Schulze, Notizbl. Bot. Gart. Berlin 12: 114. 1934; 481. *Ionidium attenuatum* Humb. & Bonpl. in Roem. & Schult. Syst. 5: 402. 1819.

Annual herb with four-cornered stems; leaves glabrous, elliptic to oblong-lanceolate, 3–7 cm. long, 1–1.5 cm. broad, the margin denticulate or remotely serrate or even entire, usually only the lower ones opposite; chasmogamic flowers solitary, axillary, about 1 cm. long; cleistogamic usually present, smaller; foremost petal clawed, twice as long as the others; ovules 3–6.—Some of the Peru collections were distributed as *H. parietariifolius* (DC.) Loes. considered by Schulze, l.c. 481, as probably a synonym.

Junín: Chanchamayo, Hacienda de la Esperanza (*Raimondi 8649*). Palca Chanchamayo (*Raimondi 2773*). Montaña de Chanchamayo (*Raimondi 2435*). Chanchamayo Valley (*Weberbauer 1959*).—Cajamarca: Jaén (*Raimondi 11494*).—Tumbez: Ricaplaya,

100 meters, flowers white, violet spot on petal below, *Weberbauer 7735.*—Huánuco: Mito, *3339* (det. Johnst.).—San Martín: Near Moyobamba, *Klug 3483* (det. Standl.). Distributed through Central America, from Mexico to Ecuador.

Hybanthus parviflorus (Mutis) Baill. Bot. Medic. Phan. 2: 841. 1884; 482. *Viola parviflora* Mutis in Linn. f. Suppl. 396. 1781. *Ionidium glutinosum* Vent. Jard. Malm. 1: no. 27. 1803.

Half-shrub or herbaceous above the caudex, very variable in habit and leaf-form; lower leaves alone or all of them opposite, ovate-elongate or obovate or lanceolate, 0.5–3.5 cm. long, generally glabrous; flowers at the end of ramifications, forming themselves into more or less definite racemes; 2 foremost filaments with an upward directed spur at the base; style in S-form.—Said to be emetic (Baillon).

Huánuco: Mito, prostrate in old field, flowers light green, *1464;* shrubby slope, flowers white, *3337* (both det. Johnst.).—Cajamarca: Camino Magdalena (*Raimondi 7150*). Cutervo (*Raimondi 3032; 3043; 5708; 7381; 7403*) (*Jelski 236*). South America except in the Guianas. "Pachagapichinya."

Hybanthus Sprucei (Eichler) Hassl. Bull. Soc. Bot. Genève sér. 2. 1: 214. 1909; 456. *Ionidium Sprucei* Eichler in Mart. Fl. Bras. 13, pt. 1: 373. 1871.

Small shrub; leaves oblong-lanceolate, acute or rather acuminate, 5–8 cm. long, 2–2.5 cm. broad, with a shallowly toothed or entire margin, generally quite glabrous; flowers sometimes solitary, more generally in axillary panicles composed of opposed pairs of flowers with small membranous bracts at the base of peduncles; foremost petal 3.5–4 mm. long, the base of the claw being as wide as the spatula; other petals a trifle shorter, ovate, dully pointed.—F.M. Neg. 24013.

San Martín: Tarapoto, *Spruce 3920,* type; *Ule 6590; Williams 6899.* Brazil.

Hybanthus tarapotinus Ule, Verh. Bot. Ver. Brandenb. 47: 158. 1905; 476.

Easy to recognize because of its white and scarious stipules, short internodes and villous leaves; branchlets rather pilose; leaves elliptic to obovate, blunt or rounded at tip, 4–6 cm. long, 1.5–2.5 cm. broad, denticulate, sparingly above and densely pilose beneath; flowers nearly 1 cm. long, solitary on slender pedicels 2–2.5 cm. long; no bracts; stigma slightly bifid.—F.M. Neg. 24014.

San Martín: Tarapoto near Juan Guerra, *Ule 6524*, type; *Spruce 4205*. Moyobamba, San Miguel between Tabalosos and Lamas (*Raimondi 1955*). Juanjuí, *Klug 4389*. Chazula, *Klug 3962* (det. Standl.).—Cajamarca: Jaén, Perico (*Raimondi 397*).

7. CORYNOSTYLIS Mart. & Zucc.

Flowers zygomorph; 2 ulterior petals small, 2 middle ones larger, oblique, and a fifth one with a long cylindrical spur. Filaments flat, united in pairs, the 2 foremost ones bearing in common one villous spur. Anthers with one enlarged connective. Style slightly curved. Capsule big, woody. Seeds almost quadrangular.—Roots used as an emetic.

Corynostylis arborea (L.) Blake, Contr. U. S. Nat. Herb. 23: 837. 1923. *Viola arborea* L. Syst. Nat. ed. 10: 1239. 1759.

Climbing shrub with alternate oval to elliptic-ovate leaves, 5–9 cm. long, 3–5 cm. broad, irregularly crenulate, acute or acuminate, glabrous; racemes terminal, leafy-bracted; flowers whitish, very fragrant, 2.5–4 cm. long, lip with strongly dilated tip; spur longitudinally half-twisted.—Illustrated, Mart. Fl. Bras. 13, pt. 1: *pl. 69*.

Loreto: Creek Itaya, *Mexia 6480*. Marañón, between Iquitos and mouth of the Santiago, at Pongo de Manseriche, *Tessmann 3570; 5123*. Florida, Río Putumayo, at mouth of Río Zubineta, *Klug 2097; 2199; 2273*. Pebas, *Williams 1848*. Near Iquitos, *Klug 2518; 1060*. Lower Río Nanay, *Williams 528*. North to Mexico, the Guianas and St. Vincent. "Chinaca-o" or "doira-o," "ampi yacu" (Huitoto).

8. ANCHIETEA St. Hil.

Reference: Hallier in Meded. Rijks Herb. 19: 64–66. 1913.

Vines or climbing shrubs with alternate leaves, zygomorph flowers in axillary fascicles or sometimes alone, small, whitish, on articulated peduncles. Foremost petal big, with a long cylindrical spur and a broad asymmetrical limb. Capsule inflated, 3-valved. One species (*A. salutaria*) is said in Brazil to be depurative (St. Hil.).

Seeds distinctly winged.

Wing broad, entire or crenate.....*A. parvifolia.*

Wing narrow, more or less cleft.....*A. Selloana.*

Seeds not winged, sometimes with an edge.

Seeds semi-globular, without edge.....*A. Raimondii.*

Seeds deltoid, with a narrow, thick, more or less entire edge.
A. peruviana.

Anchietea parvifolia Hallier, Meded. Rijks Herb. 19: 64. 1913.

Branches twining; leaves small, 5–8.5 cm. long, 13 mm. broad, ovate, crenate-serrulate at the margin; flowers solitary on slender pedicels; spur straight, ascending; seeds winged, crenate at the margin, orbicular.—The type is *Herzog 1040* from Bolivia.

Peru (probably). Bolivia.

Anchietea peruviana Melchior, Notizbl. Bot. Gart. Berlin 9: 167. 1924.

Leaves alternate, ovate or elliptic-orbiculate, acute or acuminate, crenate-serrate, glabrescent, 3.5–6 cm. long, 2–3.5 cm. broad; flowers yellowish, solitary or fasciculate; spur cylindrical; seeds deltoid, sinuate at the margin.

Lambayeque: Slope above Olmos (*Weberbauer 7100*).

Anchietea Raimondii Melchior, Notizbl. Bot. Gart. Berlin 10: 728. 1929.

Leaves rather thick, ovate to elliptic, obtuse or acuminate at the tip, crenate-serrate, glabrous, 4–7 cm. long, 2–4.5 cm. broad; floral pedicels 1 cm. long; flowers small; spur slightly recurved; seeds semi-globular, not winged.

Cajamarca: Prov. Cutervo, Tambillo (*Raimondi 3344*, type; *3484; 3538; 3804; 4853*).

Anchietea Selloviana Cham. & Schl. Linnaea 2: 148. 1827; 66.

Leaves ovate-oblong or even lanceolate, acute or acuminate, remotely crenate-dentate or subentire, entirely glabrous, 4–7 cm. long, 2.5–4 cm. broad; spur of flower longer than the limb, slender and straight; seeds orbicular, 6–7 mm. in diameter, with a very narrow and irregularly cleft wing.

Cajamarca: Tambillo (*Jelski 237;* det. Szyszy.). Brazil.

9. VIOLA Tourn.

Reference: W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 78–96. 1907.

Herbs or half shrubs. Leaves of variable shape, alternate or disposed in rosettes. Flowers axillary, always solitary, with 2 bracts on the petiole, zygomorphous, spurred. Filaments free, extremely short; the 2 foremost stamens bear on the back of the connective warts or spurs, or appendages. Capsule opening into 3 valves, keeled dorsally. Seeds generally smooth.

V. capillaris Pers., reported on the basis of a mislabeled Dombey specimen, is unknown from Peru. *V. odorata* L. has been collected by Williams, cultivated at Iquitos, the "Violeta." A common name for some native species is "Pensamiento."

Leaves disposed in rosettes.
  Annual plants; roots thin.
    Sepals striate, never trinerved.....*V. micranthella.*
    Sepals trinerved.....*V. Weberbaueri.*
  Perennial; roots thick.
    Leaf-tip folded back.....*V. replicata.*
    Leaf-tip not folded back.
      Leaves crenate or dentate.
        Leaves oblong or spatulate, obtuse or rounded at tip.
          Margin membranaceous, 2 or 3 teeth only.
V. membranacea.
          Margin tomentose.....*V. granulosa.*
        Leaves linear, acute.
          Margins 4–5, repand crenate.....*V. Hillii.*
          Margins ciliate-serrate.....*V. Weibelii.*
      Leaves with margin entire or nearly so.
        Leaves linear.
          Stipules present.....*V. pygmaea.*
          Stipules absent.....*V. pusillima.*
        Leaves not linear.
          Leaves oblong, 2–4 mm. broad.
            Stipules adnate, 1 cm. long.....*V. pallascaensis.*
            Stipules none.....*V. nivalis.*
          Leaves spathulate.
            Stipules present, adnate.....*V. nobilis.*
            Stipules wanting.....*V. Kermesina.*
Leaves alternate (not merely in rosettes).
  Leaves denticulate or crenate.
    Leaves crenate.
      Leaves 10–20 mm. long, crenate from base to tip.
V. Lehmannii.
      Leaves 3–4 mm. long, crenate at tip only.....*V. Weddellii.*

Leaves dentate.
Flowers red, long-spurred.....*V. arguta.*
Flowers whitish, purplish, short-spurred or red-striped.
Spur strangled (transversely sulcate) at its insertion.
V. saccata.
Spur not strangled.
Leaves rhomboid-ovate, abruptly attenuate at base.
V. huanucoensis.
Leaves ovate, subcordate at base.
Leaf-blades as broad as, or broader than long.
V. Mandonii.
Leaf-blades longer than broad.
Petiole longer than a third of blade's length.
V. Dombeyana.
Petiole shorter than a third of blade's length.
V. Humboldtii.
Leaf margin entire or glandulo-serrate.
Leaves acute or acuminate.
Leaf-base attenuate.
Petiole much shorter than blade.....*V. stipularis.*
Petiole as long as blade.....*V. fuscifolia.*
Leaf-base asymmetric, cordate.
Spur's length one-tenth of inferior petal.....*V. Steinbachii.*
Spur's length one-half of inferior petal.
V. arguta ssp. *meridionalis.*
Leaves obtuse, subobtuse and mucronulate at tip.*V. Bangiana.*

Viola arguta HBK. Nov. Gen. & Sp. 5: 373. 1823; 92. *V. corchorifolia* Domb. ex DC. Prodr. 1: 304. 1824.

Twining shrub; leaves denticulate, ovate, acute at tip, cordate at base, pilose beneath, mostly glabrous above, 15–45 mm. long, 7–22 mm. broad, shortly petioled; stipules brown and membranous, long ciliate; flowers large, borne on petioles as long as or longer than the leaves; petals red, the inferior one carinate; spur obtuse, broad, as long as the remaining part of petal; stamens sessile; appendage of foremost stamens short and broad, or wanting (Becker); style subulate.—Var. *glaberrima* W. Becker, l.c. 92, is like the type, but entirely glabrous. The subsp. *meridionalis* W. Becker, l.c. 93, is similarly glabrous, but with leaves only indistinctly serrate

instead of denticulate. F.M. Negs. *24018; 34830; 34832; 32174* (*V. corchorifolia*).

Huánuco: *Pavón* s.n.; southwest of Panao, alt. 3,300 meters, *2207*. Chinchao, *Poeppig* (det. Becker). Mito, supported in shrubs, the flowers scarlet, *1710*.—Cajamarca: Near San Pablo (*Weberbauer 3882*, the var. *glaberrima*).—Without locality: *Pavón 367; Pavón* s.n. (1827) under *V. coccinea; Mathews 1345*. Colombia; Ecuador.

Viola Bangiana W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 89. 1907.

Trailing, rhizomatous, the erect parts reaching 10 cm. (Becker), much shorter on examined specimens; leaves ovate, subobtuse and mucronate at tip, attenuate at base or sometimes subcordate, indistinctly glandulose-serrate, glabrous, 8–22 mm. long and broad; petiole one-third of blade's length; stipules lanceolate, brown, with long marginal hairs; pedicels longer than the leaves (up to 5.5 cm.); petals white, blue-striate, obovate, the inferior one subacuminate; appendages of foremost anthers long; ovary ellipsoid; style subulate. —Cf. *V. Dombeyana*.

Puno: San Gabán, *Lechler 2241*, type.—Cuzco: Cerro de Cusilluyoc, *Pennell 13958*. Bolivia.

Viola Dombeyana DC. Prodr. 1: 305. 1824; 90.

Creeping rhizome bearing stems of 3–10 cm.; leaves ovate, denticulate-crenate, 8–12 mm. long, 7–8 mm. broad, attenuate or subcordate, often blunt; petiole always longer than a third of blade's length; pedicels longer than the leaves; petals probably whitish or purplish-white, the upper and lateral ones oblong, the inferior carinate, acutish, very shortly spurred; connectives of the two foremost stamens produced into appendages; capsule globose; style subulate.—Species closely related to *V. Humboldtii* (and several other segregates as noted under the descriptions). The leaves are here smaller and the denticulation less apparent, the petiole is also relatively longer, compared with the blade, as in *V. Humboldtii*. Since there exist linking forms between these two species (cf. *Jameson 698*) it may be that *V. Humboldtii* is a mere variety.

V. scandens Willd., found as near as Ecuador and apparently in Bolivia, has smaller flowers rarely exceeding the leaves and remotely dentate-ciliate stipules. F.M. Negs. 24027; 34837.

Junín: Huassahuassi (*Dombey 1785*). East of Palca (*Weberbauer 2489*). Between Yapas and Eneñas, *Killip & Smith 25614*. Piura: East of Huancabamba, 3,400 meters, *Weberbauer 6144* (so distrib-

uted), petals light violet with dark violet veins.—Ayacucho: Choimocota Valley, petals with veins violet, 2,600 meters, *Weberbauer 7566*.—Without locality: *Pavón 362*, type.

Viola fuscifolia W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 94. 1907.

Rhizome creeping; erect shoot 10–20 cm. long, glabrous, densely covered with leaves; leaves ovate, asymmetric, acutish, glandulose-serrate, glabrous, thick, subabruptly attenuate into a petiole nearly as long as the blade, stipules brown, lanceolate, long-ciliate; pedicels longer than the leaves; flowers small, bluish, inferior petal obovate, subemarginate, spur extremely short; 2 foremost stamens bearing a long dorsal appendage; style subulate.—Cf. *V. Dombeyana* (F.M.).

Puno: Trail of Sandía to Chunchusmayo, between Tambo Ichubamba and Tambo Yuncacoya, alt. 1,800–2,600 meters (*Weberbauer 1096*). Prov. Carabaya, on shaded slopes, near San Juan del Oro (*Weddell* s. n., 1847).

Viola granulosa Wedd. Ann. Sci. Nat. sér. 5. 1: 292. 1864.

Undoubtedly related to *V. membranacea;* the leaves are small, spathulate, obtuse, finely crenate, tomentose below and at the margin, glabrous above, ciliate on the edges of the petiole, with pedicels about as long as the leaves; flowers small, with linear sepals; superior and lateral petals lanceolate, inferior obovate, emarginate, without spur; style S-shaped, bearing at its upper part wing-like appendages. —Illustrated, Weddell, Chlor. And. 2: *pl. 87 A*. F.M. Neg. 38482.

Cuzco: *Gay*.

Viola Hillii Becker, Kew Bull. 134. 1928.

Rhizome vertical, woody, to 10 cm. long, 5 mm. thick, the upper portion shortly 2–4-parted and clothed with remains of old leaves; rosulae formed of the erect linear-oblong leaves only to 1.5 cm. broad; leaves about 8 mm. long, the blade half as long, subfleshy, lightly pilose, obviously 4–5 repand-crenate, about 1 mm. wide; stipules rudimentary; flowers yellow, scarcely 5 mm. long, the peduncle bibracteolate basally, retrorsely hispid, to 6 mm. long; sepals oblong, acutish, pilose; upper and lateral petals oblong, the lower broad, shortly spurred; style distinctly geniculate, horizontally rostrate, with two rotund lobes on each side at tip.—Section *Andinium;* remote from all species (Becker). Illustrated, Hook. Icon. 32: *pl. 3149*.

Peru: Boundary at Lake Titicaca on red sandstone hills between Moho and Vilque Chico, 4,050–4,200 meters, *A. W. Hill 28*.

Viola huanucoensis W. Becker, Repert. Sp. Nov. 18: 186. 1922. *V. truncata* W. Becker, l.c. 94.

Different from *V. Humboldtii*, by the shape of the leaves, which are here rhomboid-ovate; petals whitish, the superior and lateral oblong, inferior obovate, more or less triangular, plicate, emarginate, with very short spur; foremost anthers cuspidate; capsule ellipsoid; style subulate.—Cf. *V. Dombeyana* (F.M.).

Huánuco: Northwest of Monzón (*Weberbauer 3715*).

Viola Humboldtii Triana & Planch. Prodr. Fl. Nov. Granat. 121. 1862; 90. *V. stipularis* HBK. Nov. Gen. & Sp. 5: 372. 1823. *V. capillaris* Ging. in DC. Prodr. 1: 304. 1824.

Thin rhizome prostrate, ramified; erect stalks up to 20 cm. long; leaves ovate, densely and sharply serrate, asymmetrically subcordate at base, 7–22 mm. long, 6–14 mm. broad; petiole shorter than a third of blade's length; stipules brown, membranous, ciliate; flowers similar to those of *V. Dombeyana* (to which it probably goes as a var. F.M.).—There exists a var. *cuneata* W. Becker, 91, which is said to have cuneate leaves. An examination of a co-type did not show any marked difference from the main species. F.M. Neg. 24033.

Cajamarca: San Miguel, alt. 3,000 meters, *Weberbauer 3947*. Hualgayoc, alt. 3,100–3,300 meters, *Weberbauer 4020* (co-type of var.). Colombia; Ecuador.

Viola Kermesina W. Becker, Repert. Nov. Sp. 7: 124. 1909.

Species with the same habit as *V. nivalis* Benth. but the leaves here are spathulate, rounded to truncate at tip, ciliate on both faces and at margin, attenuate, without stipules; pedicels longer than the leaves; sepals broadly ovate, somewhat obtuse; petals scarlet, the upper and lateral one oblong-obovate, inferior one carinate, obcordate emarginate; spur rather thick; ovary slightly pilose; style S-shaped, dilated into two lobes at tip.

Junín: Near Yauli, along the railroad tracks, between Lima and Oroya, alt. 4,600 meters (*Weberbauer 330*).

Viola Lehmannii Becker, subsp. **ovalifolia** W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 91. 1907.

Resembles *V. Humboldtii:* same habit and same flowers; leaves ovate, crenate, glabrous, 8–20 mm. long, 7–15 mm. broad, rather abruptly contracted into a short petiole; stipules as in *V. Humboldtii*. —The subsp. *cordifolia* W. Becker, l.c. 92, has leaves crenate, subobtuse, cordate; petiole as long as or longer than blade's length.

Probably not specifically distinct from *V. Dombeyana* (F.M.). F.M. Neg. 24035.

Amazonas: Between Pucasmajo and Moyobamba, alt. 3,100 meters (*Stuebel 26d*). Molinopampa, *Osgood & Anderson 43*.—Without locality, *Mathews 3105* (type, subsp. *cordifolia*).

Viola Mandonii W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 95. 1907.

Species belonging to the complex of *V. Humboldtii;* the leaves here are broadly ovate, often as large as long (10–22 mm.), subcordate, with spaced sharp teeth; petiole longer than a third of limb's length (up to 5 cm.); petals whitish, superior and lateral ones oblong, inferior elliptic-obovate, acute or even acuminate at tip; spur short; style subulate (cf. *V. Dombeyana*, F.M.).—The type is *Mandon 943* from Bolivia. F.M. Neg. 24036.

Peru (probably). Bolivia.

Viola membranacea W. Becker, Repert. Nov. Sp. 7: 123. 1909.

Related to *V. nivalis*, showing the same leaves disposed in rosettes and the same spindle-like and thick rhizome; leaves oblong, attenuate at base, with 3–4 deep and wide crenatures near the tip and a submembranous edge, 10–20 mm. long, 1.5–4 mm. broad; stipules membranous, adnate for the most part, ending in a long acumen; flowers small, whitish; superior petal erect, larger than the others, emarginate; inferior petal the smallest, subplicate, ovate.

Junín: Near Yauli, along the railroad tracks, between Lima and Oroya, alt. 4,600 meters (*Weberbauer 347*).—Huánuco: Yanashallas, protected rock crevices, flowers pale lavender, 5,000 meters, *2478*.—Ancash: Pelagatos, 4,400 meters, *Weberbauer 7228*.

Viola micranthella Wedd. Ann. Sci. Nat. sér. 5, 1: 291. 1864.

Annual; root thin; leaves disposed in a rosette, almost sessile or attenuate into a short petiole, linear or lanceolate-spathulate, subobtuse, glabrous, almost entire, 9–20 mm. long, 2–4 mm. broad; stipules linear, 2–4 mm. long, membranous; pedicels shorter than the leaves; petals white, the superior ones obovate, the inferior emarginate; spur at least as long as a third of the inferior petal, the 2 foremost stamens with long appendages engaged into the spur.—F.M. Neg. 34848.

Junín: Río Blanco, alt. 4,000 meters, steep grass-shrub hillside, *775*. Above San Bartolomé, 1,800 meters, *Weberbauer 5211*.—Cuzco: Huarocondo, 3,200 meters, *Herrera 3633*. Prov. Canas,

Vargas 933.—Puno: In shade-grasses, 4,100 meters, Araranca, *Pennell 13463.* Pucará, 3,700 meters, *Weberbauer 429.* Bolivia.

Viola nivalis Benth. Pl. Hartw. 160. 1845.

Rhizome spindle-like, simple or ramified, quite broad in its upper portion which is covered with leaf-scars; leaves disposed in a rosette, oblong-lanceolate, acute, finely denticulate or almost ciliate at the margin, glabrous on both faces, attenuated into a membranaceous petiole, 10–20 mm. long, 2–4 mm. broad; stipules absent; pedicels much shorter than the leaves; inferior petal broadly obovate, emarginate; spur obtuse, short; appendages of the 2 foremost petals filiform and as long as the anther cells; style bill-shaped and bearing 2 membranous lobes.—F.M. Neg. 24038.

Peru (probably). Bolivia; Ecuador.

Viola nobilis W. Becker, Bot. Jahrb. 37: 590. 1906.

Rhizome woody, spindle-like, ramified; leaves broadly spathulate, obtuse at tip, attenuate below, entire, glabrous, 20–60 mm. long, the blade alone measuring only 15–20 mm.; stipule partially adnate, ovate-lanceolate, acuminate, entire, glabrous, submembranaceous; flowers small, on long pedicels (4–12 cm.) and without bracts; sepals trinerved; petals rarely entirely purple, more commonly white and purple-veined; inferior petal short, obcordate, emarginate with remarkably short spur; style slightly enlarged above with 2 membranous appendages.

Junín: West of Huacapistana, alt. 3,200 meters (*Weberbauer 2214*).

Viola pallascaensis W. Becker, Repert. Sp. Nov. 18: 181. 1922.

Rhizome thick, simple or divided above, as in *Viola nivalis* Benth.; leaves disposed in rosette, oblong repand-margined, subobtuse, attenuate, hairy above, glabrous below, 7–9 mm. long, 2–3 mm. broad; petiole 6–8 mm. long, stipules membranous, adnate almost on their whole length to the petiole; pedicels little longer than the leaves; sepals trinerved; petals 3–4 mm. long, yellow, spur very short; style clavate, bent at base, obliquely flattened at the tip, papillose, with very short bill.

Ancash: Prov. Pallasca, below the mines of Huaura, 3,800 meters, (*Weberbauer 7200*).

Viola pusillima Wedd. Ann. Sci. Nat. sér. 5. 2: 291. 1864.

Species related to *V. pygmaea;* same habit and same linear leaves, acutish above, densely ciliate up to the base; petiole winged,

broader below; no stipules; pedicels shorter than the length of the leaf; flowers small, yellowish; inferior petal plicate, broadly obovate, emarginate; spur very short; superior petals obovate, not acuminate, dorsal appendages of anthers half as long as length of cells; appendages of style erect and short.—Similar is *V. Orbignyana* Remy of adjacent Bolivia with retrorsely ciliate leaves equaled by the peduncles, the style appendages reflexed. The type is *Mandon 941* from Bolivia. F.M. Neg. 24042.

Peru (probably). Bolivia.

Viola pygmaea Juss. ex Poir in Lam. Encycl. 8: 630. 1808.

Same habit as *V. nivalis;* rhizome ramified or simple; leaves disposed in rosette, linear, sessile, acutish or subobtuse, 1–2 (–5) cm. long, 1–2 mm. broad, entire, sometimes with irregularly disposed hairs at the margin; scale-like stipules ovate and subacute; pedicels as long as or somewhat shorter than the leaves; petals bluish, striate-veined, inferior one carinate, broadly obovate, deeply emarginate with a spur one-sixth of the length of the whole petal; appendages of the 2 foremost stamens filiform, shorter than the cells; style S-shaped.—F.M. Negs. 24043; 34856.

Puno: Near Puno, 4,000 meters, *Soukup 439.* San Gabán, *Lechler 2218.* Limbani near Mount Aricoma in damp turf, 4,400 meters, *Vargas 9650.*—Cuzco: *Gay 2060,* fide Gay. Paucartambo, 3,600 meters, *Vargas 19;* also 4,000 meters, *Vargas 9719* (det. Asplund).—Without locality, *J. de Jussieu; Pavón* (1827). Bolivia. "Huallpa huallpa."

Viola replicata W. Becker, Bot. Jahrb. 37: 589. 1906.

Species with the same habit as *V. nivalis;* leaves arranged in rosette, obovate, deflexed at tip, 10–15 mm. long, 2–3 mm. broad, pubescent on both faces, more or less of a grayish-green color; petiole absent; pedicels as long as or longer than the leaves; sepals hirsute; petals white, the inferior one obcordate, slightly emarginate, plicate, subhirsute below; spur short; ovary fuzzily pilose.—It has been reported that the natives use a brewage of the whole plant to fight against fever and colds.

Ancash: Near Huaraz, 4,500 meters, *Weberbauer 2961,* type. "Siete sabros."

Viola saccata Melchior, Repert. Sp. Nov. 28: 96. 1930.

In habit a species much like *V. Humboldtii;* erect stems up to 10 cm.; inferior leaves orbiculate or broadly elliptic; superior leaves

larger, asymmetrically ovate or rhomboid-ovate, acute at tip, 12–23 mm. long, 8–20 mm. broad, glabrous, finely and sharply serrate; petiole shorter than one-half or even one-third of blade's length; pedicels longer than the leaves; sepals distinctly toothed; petals bluish-white, inferior one carinate, ending in a strangled spur five times shorter than the petal; stamen sessile; apical appendages as long as cells, the 2 foremost anthers bearing at the base of connective an appendage broad at base, filiform at tip; ovary glabrous, long, conical; style straight.—The spur, sulcate transversely to the petal, and sac-like, has been described as "strangled," appropriately.

Cuzco: Quispicanchi, Marcapata, alt. 3,100–3,200 meters, *Weberbauer 7780*, type.

Viola Steinbachii W. Becker, Notizbl. Bot. Gart. Berlin 9: 1040. 1926. *V. boliviana* W. Becker, Beih. Bot. Centralbl. 22, pt. 2: 88. 1907, not Britton, 1889.

Trailing or twining shrub; twigs reaching 40 cm. long; leaves ovate, acute at tip, asymmetrically cordate at base, glabrous, indistinctly glandulous-serrate, 20–50 mm. long, 11–30 mm. broad; stipule as in *V. Humboldtii*, membranaceous, ciliate; pedicels longer than the leaves; flowers white, blue-striate; inferior petal subacuminate; spur short; appendages of foremost anthers long; style subulate.

Puno: Sandía, alt, 2,100–2,300 meters (*Weberbauer 645*).—Cuzco: Cerro de Cusilluyoc, *Pennell 13993* (det. Melchior).

Viola stipularis Swartz, Prodr. 117. 1788; 86. *V. begoniaefolia* Benth. Pl. Hartw. 161. 1845. *Ionidium stipulare* Roem. & Schult. Syst. 5: 392. 1819.

Species related to *V. Steinbachii;* creeping rhizome; erect stem 10–20 cm. long, rarely reaching 30 cm. (*Schlim 579*); leaves generally only at the end of ramifications, elliptic-lanceolate, glandulous-serrate or slightly and shallowly dentate or crenate, 23–82 mm. long, 9–34 mm. broad; stipules brown, up to 20 mm. long and 6 mm. broad; pedicels shorter than length of leaf; petals whitish, blue-veined, inferior one obovate, subacuminate; spur very short; appendages of foremost anthers long; style subulate.

Junín: Tarma, west of Huacapistana (*Weberbauer 2102*).—Without locality (*Lobb* s.n.). West Indies; Venezuela; Colombia; Ecuador.

Viola Weberbaueri W. Becker, Bot. Jahrb. 37: 588. 1906.

Related to *V. micranthella;* diameter of rosette up to 6 cm.; annual with thin root; leaves linear-spathulate, subobtuse, entire,

glabrous but for the ciliate margin, 15–30 (45) mm. long, 1.5–3 mm. broad; stipules small, very narrow or wanting; pedicels shorter than leaves; sepals linear-oblong, subobtuse, glabrous, trinerved, membranous at the margin; petals pale yellow, inferior petal carinate, emarginate; spur short; style curved, bill-shaped at tip and bearing 3 membranaceous appendages, the middle one short and directed backwards, the lateral ones longer, narrow and protruding forwards; ovary glabrous.

Arequipa: Mollendo, in loma formation, alt. 100 meters (*Weberbauer 1541*, type); *Hill 29* (det. Becker).—Arequipa: Tingo, open sandy slopes, flowers citron yellow, *Pennell 13115* (det. Melchior).

Viola Weddellii W. Becker, Repert. Sp. Nov. 26: 25. 1929.

Species with the same aspect as *V. Humboldtii;* stem 5–6 cm. long, densely foliate; leaves orbicular, 3–4 mm. long and broad, rounded or almost cuneate at base, obtuse at tip with 2–3 (4) crenatures; pedicels 15–20 mm. long; flowers small, 6–7 mm. long; spur short; ovary red-spotted.

Puno: Carabaya, above San Juan del Oro (*Weddell 1847*). Cuesta de Quequenta (*Raimondi 9215*).—Cuzco: Cerro de Cusilluyoc, 3,400 meters, petals light violet, *Pennell 13890* (det. Melchior). Prov. Acanacu, Paucartambo, 3,500 meters, *Vargas 318* (det. Standl.).

Viola Weibelii Macbr., sp. nov.

Rhizoma verticale, lignosum, plus minusve divisum; folia linearioblonga, circa 1.5 cm. longa, 2 mm. lata, inciso acuteque irregulariter ciliato-serrata, supra subfoveolata, glabra, vix in petiolum angustata; stipulae elongatae, chartaceae, profunde fimbriatae; pedunculi circa 1 cm. longi; sepala lineari-lanceolata acuminata; petala superiora lateraliaque obovata integra; petala infimum late obovata crenata valde calcaratum; stylus paullo dilatatus vel geniculatus. Section *Andinium*.—Flowers white or faintly lavender, with yellow eye.

Junín: Cerro de Pasco, limestone slopes, loose soils, *Macbride 3060*, type.

10. NOISETTIA HBK.

Flowers zygomorphous, the petals being very unequal in size and form, the foremost one large with a long and thin spur. Stigma 3-lobed. Capsule wrapped in the remains of corolla and calyx.

Noisettia orchidiflora (Rudge) Ging. in DC. Prodr. 1: 290. 1824. *N. longifolia* HBK. Nov. Gen. & Sp. 5: 384. *pl. 499b*. 1823.

Half-shrub 30–50 cm. high, often unramified; leaves oblong-lanceolate, 10–15 cm. long, 2–4 cm. broad, glandulous-serrulate; inflorescences few-flowered (2–5); flowers yellowish or white; stamens and style shorter than the calyx; capsule greenish, 7–10 mm. long; seeds becoming black, 2 mm. in diameter.—Illustrated, Mart. Fl. Bras. 13, pt. 1: *pl. 70.*

San Martín: Tarapoto, *Spruce 4006; Williams 6013.* Pongo de Chilcayo, *Ule 6342.*—Loreto: Chinganilla (*Huber 1500*). Guiana; Brazil.

11. LEONIA Ruiz & Pavón

Flowers actinomorph. Stamens completely united into a tube, the anthers being immersed in its edge and without appendages. Fruit a nut with a hard pericarp. Wood esteemed for construction (Williams).

Leonia cymosa Mart. Nov. Gen. & Sp. 2: 88. 1826.

Tree 3–8 meters high; leaves oblong or elliptic, slightly acuminate, 10–15 cm. long, 4–6 cm. broad, entire or shallowly dentate, a little decurrent on the upper part of the petiole; flowers yellow or orange, 3–4 mm. long, arranged irregularly in dichotomous cymes 3–4 cm. long; fruit berry-like, with woody pericarp.—Illustrated, Mart. Nov. Gen. & Sp. 2: *pl. 169.*

Loreto: Basin of the Marañón, mouth of Santiago at Pongo de Manseriche, *Tessmann 4343, 4436.* Yurimaguas, *Poeppig 2369.* Near Iquitos, *Klug 893; 303; 325; Killip & Smith 26959; Williams 8009; 1335; 3702.* Pebas, *Williams 1573.* Lower Río Nanay, *Williams 692.* Brazil.

Leonia glycycarpa R. & P. Fl. Peruv. 2: 69. *pl. 168.* 1799. *L. racemosa* Mart. Nov. Gen. & Sp. 2: 86. 1826.

Shrub 1.5–6 meters or tree up to 35 meters (Krukoff); leaves big (12–35 cm. long, 5–12 cm. broad), oblong, shortly acuminate; inflorescences more or less pendulous, sometimes 40 cm. long; flowers whitish; fruit the size of a peach or smaller.—The flesh of the fruit is soft or jelly-like, edible. Common in forest free from inundations (Williams). Illustrated, Mart. Fl. Bras. 13, pt. 1: *pl. 80.*

San Martín: Tarapoto, *Williams 6565, Spruce 4424, 4613; Ule 6444.*—Junín: Río Perené, 600 meters, *Killip & Smith 25101.*—Ayacucho: Río Apurímac, valley at 400 meters, *Killip & Smith 23049.*—Loreto: Basin of Marañón, *Tessmann 4455; 5136.* Ucayali, *Tessmann 3185; 5428.* Balsapuerto, *Klug 2958.* Near Iquitos,

Klug 1223; Killip & Smith 27144; 27017; 27457; 27130. Williams 8014; 8166. Florida, Río Putumayo, at mouth of Río Zubineta, *Klug 2313.* San Antonia De Playa (*Tafalla* s.n.). Yurimaguas, *Williams 5254.* La Victoria, *Williams 3095; 2946.* Río Itaya, *Williams 3483; Killip & Smith 29429.* Caballo-Cocha, *Williams 2195.* Bolivia; Brazil; Acarai Mountains at the border of British Guiana. "Witu-malla," "urca-tamara," "nina caspi," "trapiarana."

TURNERACEAE

Reference: Urban, Jahrb. Bot. Gart. Berlin 2: 1–150. 1883.

Herbs or low shrubs (sometimes tall or trees) with alternate leaves, no stipules or these small, regular solitary or few axillary hermaphrodite flowers, their 5 petals soon falling, twisted in bud, their caducous sepals imbricated, united below. Peduncles sometimes joined to the petiole. Stamens 5, inserted at middle or base of the calyx tube. Ovary 1-celled, the 3 styles simple or parted, the stigmas conspicuously brush-like. Capsules thin or firm with many pitted seeds.—The style character is distinctive. Urban's work appeared later the same year in Mart. Fl. Bras. 13, pt. 3: 86–170, with a number of illustrations.

Calyx tube without a crown; styles simple.....1. *Turnera.*
Calyx tube with a fringed crown at petal-base; styles parted.
2. *Piriqueta.*

1. TURNERA [Plum.] L.

Pubescence usually simple or nearly wanting. Leaves various, often glandular toward or at the petiole. Flowers sometimes crowded or aggregated, always bracteolate, usually with no pedicel, the peduncles free or joined to the petioles. Petals generally yellow.—Since Urban's monograph a number of species have been described by him from the Amazonian Valley, notably in Repert. Sp. Nov. 13: 155–159. 1914, which may of course be found in eastern Peru.

Peduncles adnate to the petioles.
Softly villous annual; seeds curved, tuberculate.....*T. Pumilea.*
Strigose perennial or suffrutescent; seeds little curved, striate.
T. ulmifolia.

Peduncles free.
Pedicels none; leaves ovate-lanceolate, rather coarsely serrate.
Calyx 12–18 mm. long; bracteoles 2.5–8 mm. wide....*T. acuta.*
Calyx 8–10 mm. long; bracteoles to 1.5 mm. wide.
T. macrophylla.

Pedicels developed; leaves narrowly lanceolate, obscurely serrate.
Styles conspicuously flagellate, to 6 mm. long.....*T. luminosa.*
Styles minutely flagellate, to 4 mm. long.....*T. Weddelliana.*

Turnera acuta Willd. ex Roem. & Schult. Syst. 6: 678. 1820; 96.

Lightly pubescent shrub attaining at least 1 meter; petioles 4–10 mm. long, glandular beneath the leaf blade, this unequally narrowed at base and apex, the larger 5–12 cm. long, 2–4 cm. wide, shortly pilose beneath on the nerves; flowers dimorphic, solitary, the fruiting peduncles 3–10 mm. long; bracteoles 8–12 mm. long; calyx lobes narrow with setaceous tip; petals about 13 mm. long; filaments finely pubescent; styles hirsute, the longer 9–11 mm. long, flagellate for 1 mm., the shorter half as long; capsules hirtellous, the seeds little to manifestly curved, striate.—Illustrated, Mart. Fl. Bras. 13, pt. 3: *pl. 38.*

Loreto: Iquitos, *Williams 3661.* Río Nanay, *Williams 778.* Brazil; Venezuela.

Turnera luminosa Macbr. Candollea 6: 12. 1934.

Branchlets striate, caducously rusty-appressed-strigose as the buds, petioles and young leaves on the midnerves beneath; stipules 1 mm. long; petioles 2–3.5 mm. long, eglandular; leaves narrowly elliptic, cuneately acute at both ends, 4–7 cm. long, 1.5–2 cm. wide, medially crenate-serrulate, pale green, membranous, soon glabrous except for sparse minute pubescence on the veins; flowers solitary; peduncles 5–10 mm. long, the pedicels 4–5 mm. long; calyx appressed-pilose, 7–9 mm. long, narrowly campanulate, lobes half as long, ovate-acuminate, the tube pilose within, scarcely 4 mm. wide at throat; petals nearly 15 mm. long; filaments pilose below; anthers long-apiculate, 4 mm. long; styles glabrous, 6 mm. long, the 5–7 flagellate stigmas about 1 mm. long; capsules glabrous, verruculose-tuberculate, the seeds strongly curved, obovate-oblong, sparsely pilose, reticulate, attenuate above.—A shrub 1 meter high (Weberbauer), perhaps not separable from *T. Weddelliana* typically of Paraguay but the flowers apparently monomorphic with longer styles; stipules also longer.

Cuzco: Bushwood in savanna near Quillabamba, Urubamba Valley, *Weberbauer 7952,* type.

Turnera macrophylla Urban, l.c. 95.

Similar and allied to *T. acuta* but with rather larger leaves more pilose beneath, monomorphic flowers, the fruiting peduncles 4–5 mm.

long, bracteoles 3–6 mm. long, the filaments merely puberulent.—The Peruvian occurrence is recorded by Urban as "in andibus Peruvianis: fide herb. Acad. Petropol." F.M. Neg. 13590.

Peru (cf. above). Amazonian Brazil.

Turnera Pumilea L. Amoen. Acad. 5: 395 (reprint, 377) 1760; 114.

White-pubescent, estipulate, often bushy branched annual, the monomorphic flowers aggregated in terminal clusters; petioles 5–10 mm. long; leaves oblong-lanceolate or more or less obovate, cuneate at base, acute or rather obtuse, 2–6 cm. long, 1–2.5 cm. wide, coarsely crenate-serrate, sometimes glandular at base; calyx 6–7 mm. long, the petals little longer than the acuminate lobes; filaments glabrous as the style or this sparsely pilose, 3.5–5 mm. long, unequally flagellate; capsules hirsute; seeds curved, reticulate-tuberculate.—Similar and to be expected is *T. melochioides* Camb., 115, perennial or shrubby, the leaves sometimes narrower, the flowers dimorphic, the seeds not tuberculate.

Tumbez: *Weberbauer 7732.*—Piura: Serrán, *Weberbauer 5986; 5946* (det. Urban). Tablazo, *Haught 149.* Cabo Blanco, *Haught F-53.*—San Martín: Tarapoto, *Spruce 4075* (det. Urban). Warm America.

Turnera ulmifolia L. Sp. Pl. 271. 1753; 138. *T. peruviana* Willd. ex Roem. & Schult. Syst. 6: 679. 1820.

More or less woody perennial with usually narrowly obovate short- or long-petioled leaves and short- or well-peduncled homo- or heterostylous flowers, the peduncles nearly always totally adnate; calyx 11–25 mm. long; petals sometimes reddish; filiform style branchlets 1–2 mm. long; seeds obovate to oblong, little if at all curved, reticulate striate.—Highly variable vegetatively; among the many named forms may be mentioned the var. *intermedia* Urb., 140, with yellow heterostylous flowers, calyx 12–20 mm. long, peduncles 3–7 mm. long, lower leaves ovate.—Notwithstanding the name, *T. peruviana* was from Venezuela; cf. HBK. Nov. Gen. & Sp. 6: 127. 1823. Illustrated, Fawc. & Rendle, Fl. Jam. 5, pt. 3: *fig. 91.*

Cajamarca: Jaén, *Weberbauer 6236* (det. Urban).—San Martín: Tarapoto, *Williams 5540; 5533; 6416; Ule 6460* (var. *intermedia*, det. Urban); *Williams 5533.* Near Moyobamba, *Klug 3570* (det. Standl.). Río Huallaga, *Klug 4073.*—Huánuco: Huánuco, *3515; Stork & Horton 9386.* Warm America; India.

Turnera Weddelliana Urb. & Rolfe, ex Urban, l.c. 90.

Vegetatively like *T. luminosa* but the stipules minute, rarely even 0.5 mm. long; peduncles 2–15 mm. long; pedicels 3–8 mm. long; calyx 6–12 mm. long, the lobes a third longer than the tube; flowers dimorphic; longer filaments 6–7 mm. long, the shorter 3 mm. long; longer styles 3.5–4 mm. long.—Very probably the Peruvian collection, if Peruvian, is referable to *T. luminosa*. The closely allied *T. Hindsiana* Benth., 91, from southern Ecuador, may be distinguished by its broader leaves and glabrous filaments. F.M. Negs. 13612 (var.); 24132.

Peru(?): Without locality (*Lobb 292*). Southern Bolivia to Paraguay.

2. PIRIQUETA Aubl.

Except as noted in the key with the general characters of *Turnera* but often stellate-pubescent and flowers generally solitary in the axils, not always bracteolate, and the peduncles always free.—In some related families the calyx may or may not have a crown in the same genus.

Piriqueta cistoides (L.) Griseb. Fl. Brit. W. Ind. 298. 1860; 73. *Turnera cistoides* L. Sp. Pl. ed. 2. 387. 1762.

Annual but often stout and several dm. high; leaves subsessile or the petioles to 1 cm. long, ovate or nearly oblong, 3–8 cm. long, not glandular; flowers homostylous; bracteoles none or minute; pedicels 3–6 mm. long; calyx 4–9 mm. long, the lobes about half as long as the tube; capsules pilose but smooth, the slightly curved seeds etuberculate.—Variable, the Peruvian form being var. *latifolia* Urban, l.c. 74, with mostly ovate leaves 1.5–3 cm. wide, nearly always deeply and usually irregularly crenate or erose-dentate. *P. Duarteana* (Camb.) Urban, 66, which has been found in Brazil near southern Peru is a perennial with violet or roseate heterostylous flowers, the calyces 7–16 mm. long, the capsules tuberculate. Illustrated, Mart. Fl. Bras. 13, pt. 3. *pl. 35*. F.M. Neg. 38468 (var.).

San Martín: Tarapoto, *Williams 7119*. Warm America.

MALESHERBIACEAE

Pubescent herbs or mostly simple-stemmed half-shrubs with densely crowded frequently narrow leaves and more or less elongate spike-like racemes of yellowish or red flowers, the leaves gradually reduced above and bract-like in the inflorescence. Technically the family is similar to Passifloraceae and to Turneraceae but is distin-

guished from both by the lack of aril and by the placement of the 3–4 styles, these arising from below the ovary tip and more or less remotely from each other. Ovary stiped. Capsule enclosed in the calyx tube.

MALESHERBIA R. & P.

Gynopleura Cav. Icon. 4: 51. *pl. 376.* 1797.

This, the only genus, was dedicated to Lamoignon de Malesherbes, "lover of plants and patron of botanists"; he was a minister under Louis XVI and was beheaded, perhaps because of the "greatness of his soul." (Ruiz & Pavón.) Harms, in Notizbl. Bot. Gart. Berlin 8: 209–212. 1922, gave a helpful synopsis of the Peruvian species, at that time only 6.—A common name is "clavelina."

Calyx elongate, cylindrical or more or less enlarged at the middle.

Leaves variously crenate or dentate but not pinnately divided.

Calyx tubular, that is, little if at all inflated medially.

Flowers yellowish, sometimes reddish tinged; crown more or less undulate.

Calyx 3 cm. long, 5–6 mm. broad; leaves unequally serrulate.....*M. tubulosa.*

Calyx 3.5–4 cm. long, 6–10 mm. broad; leaves evenly crenulate-dentate or subentire.

Calyx somewhat inflated, 9–10 mm. broad; leaves appressed sericeous pilose, eciliate..*M. Weberbaueri.*

Calyx tubular, 6–8 mm. broad; leaves spreading villous, viscid-ciliate with crisped hairs.....*M. Galjufii.*

Flowers fiery red; crown deeply lobed, the lobes dentate. *M. ardens.*

Calyx definitely inflated medially.

Leaves sessile, linear-oblong, finely and irregularly toothed. *M. thyrsiflora.*

Leaves narrowed to petiolar base, elliptic, evenly toothed. *M. scarlatiflora.*

Leaves pinnately divided.....*M. angustisecta.*

Calyx funnelform, 1.5–2 cm. long.

Leaves deeply pinnatifid; crown 7 mm. high.....*M. haemantha.*

Leaves not pinnatifid; crown 13 mm. high.....*M. turbinea.*

Malesherbia angustisecta Harms, Notizbl. Bot. Gart. Berlin 8: 210. 1922.

Softly ashy-villous, little if at all branched shrub with greenish-white flowers; leaves oblongish, deeply pinnatisect, the 4–5 divisions narrowly linear and sometimes with a lateral tooth or lobe; stipules linear to 1.5 cm. long; flowers shortly pedicellate often 2–4 on short branchlets, these forming an elongate terminal panicle; calyx nearly cylindrical, slightly enlarged toward the tip, 2–2.7 cm. long, 5–6 mm. broad; sepals oblong-ovate, acutish, sparsely pilose or glabrate, 7–8 mm. long, about equaled by the obovate broadly based petals; crown minute; ovary a little villous only at tip.—Nearly *M. pulchra* Phil. but that has a broader calyx and much higher crown; cf. Harms' remarks. Similar is *M. tenuifolia* D. Don, also Chilian apparently instead of Peruvian as per Kew Index, but crown of that is deeply lobed. Only more collections can determine if the crown difference is constant but also the Chilean plants seen are more strigillose than loosely villous. To 0.5 meters high (Weberbauer).

Arequipa: In rocks with other shrubs and cacti, 2,350 meters, above Caraveli, *Weberbauer 7179*, type.

Malesherbia ardens Macbr. Field Mus. Bot. 4: 117. 1927.

Softly ashy-villous strict shrub with racemes of tubular fiery red flowers; upper stem leaves sessile, oblong-lanceolate, 3–4 cm. long, 6–12 mm. wide, cuneate at base, obtuse, unequally and crisply crenate-dentate or deeply serrate especially at the base, rather subappressed-hirsute, the margins ciliate with some long yellowish hairs; raceme-leaves little reduced, the racemes 1–3 dm. long; pedicels 1–1.5 cm. long; bracts narrowly oblong-lanceolate, about 1 cm. long; calyx little inflated medially, 2.5–3 cm. long, 8–10 mm. broad, lightly pilose; sepals ovate, acute, 6 mm. long, 2 mm. wide at base; petals narrowly oblong-lanceolate, 5 mm. long; crown about 3 mm. high, deeply lobed, the lobes acutely dentate; stamens exserted about 8 mm.; capsules pilose, long-exserted, the oval seeds foveolate.—To 0.5 meters high (Weberbauer).

Moquehua: In shrubby dry ravines, southeast of Moquehua, *Weberbauer 7436a*, type; also between Moquehua and Torata, *7436*.

Malesherbia Galjufii Macbr. Field Mus. Bot. 4: 92. 1925.

Softly villous throughout with a close indument of short spreading hairs; leaves sessile, acuminate or acute, linear-lanceolate, minutely crenate-dentate, conspicuously crisply ciliate on the margins with yellow hairs even 1 mm. long; racemes leafy bracted to 3 dm. long; pedicels 8 mm. long; flowers greenish-yellow, long-pilose, tubular, 3.5–4 cm. long, rarely 9 mm. broad; sepals lanceolate,

acuminate, 7 mm. long, the petals similar but shorter; crown irregularly and lightly dentate; stamens exserted about 5 mm.—With flowers similar to *M. tubulosa* but with entirely different leaves and pubescence, this velvet-like except for the strikingly ciliate leaf-margins. It is named for Sr. Cristobal Galjuf, proprietor of the coal mines at Huarón, who generously contributed mules and arriero to a Field Museum expedition on which this handsome plant was found.

Junín: Huartas, in loose rocky soils of steep canyon side, *1347*.

Malesherbia haemantha Harms, Notizbl. Bot. Gart. Berlin 8: 211. 1922.

Hirsute-villous half-shrub with deeply pinnatisect leaves and blood-red turbinate flowers borne in long terminal racemes; pinnae 12–17, narrowly lanceolate, 3–7 mm. long, often coarsely and irregularly crenate-serrate, the serrations setose-mucronulate; racemes to about 2.5 dm. long, bracteate, with reduced lanceolate leaves; calyx villous, 1.5–2 cm. long, at top 8–10 mm. broad; sepals lanceolate, acute, setulose at tip, 7–8 mm. long, nearly 3 mm. wide at base; petals nearly lanceolate, setose tipped, 5–7 mm. long, 1 mm. wide at base; crown to 7 mm. high, variously cleft.—Calyx and stamens blood-red, the crown blood-red with black throat, the anthers black (Weberbauer).

Arequipa: Above Quicacha, prov. Camaná, 2,100 meters, xerophytic cactus-shrub formation, *Weberbauer 7181*, type.

Malesherbia scarlatiflora Gilg, Bot. Jahrb. 50: Beibl. 111: 11. 1913.

Strict or little branched shrub more or less clothed below by the persisting crowded leaf-remains; leaves oblong-obovate, rounded at tip, gradually narrowed to a petiolar base, densely silky yellowish tomentose on both sides, equally serrate-dentate, 1–10 cm. long, 2.5–3.5 cm. wide, the nerves and veins prominently reticulate beneath; flowers scarlet, the limb yellow or greenish-yellow in racemes to 3.5 dm. long, the bracteate leaves strongly reduced above; calyx somewhat inflated, about 4 cm. long, 10 mm. broad at middle, densely silky yellow tomentose; sepals lanceolate, very acute, 7–8 mm. long, 2 mm. wide at base, the petals shorter and narrower; otherwise like *M. Weberbaueri*, fide Gilg.—My specimen is from a plant 1 meter high, candelabra-like in branching, leafless except at inflorescence, the flowers orange red, the corolla tips greenish-yellow.

Lima: In stony outcrop, above Matucana, 2,400 meters, *Weberbauer 5219*, second no. cited; in rocks, *Savatier 488;* rocky out-

crop, *1205*.—Huancavelica: Huaytará, between 13° & 14° above Pisco, 2,700 meters, *Weberbauer 5411*, first no. cited (type?).

Malesherbia thyrsiflora R. & P. Fl. Peruv. 3: 30. *pl. 254*. 1802.

Suffruticose, little branched below, the simple branches to 1 meter high, rather yellowish villous-hirsute throughout; leaves linear- or oblong-lanceolate, more or less irregularly, sometimes deeply, sinuate-dentate, sessile, 5–7 cm. long, 3–6 mm. wide, the upper somewhat reduced and bract-like in the rather loose racemes, these 1–2 dm. long; flowers reddish yellowish-green, densely villous, about 3.5 cm. long, 8 mm. wide medially where somewhat inflated; sepals narrowly linear-lanceolate, long-acuminate to 6 mm. long, the petals about half as long, ovate-acuminate; crown about 3 mm. high, lobed.—This excludes *G. tubulosa* Cav. cited by Ruiz & Pavón as a synonym possibly in confusing the species but apparently rather by assumption, since the generic name was a synonym. Pubescence slightly "sticky," the plants somewhat foetid.

Lima: St. Eulalia, Chosica, *Weberbauer 5723* (det. Harms). Cheuchín, *Dombey; Ruiz & Pavón* (part type). Canta, Huarochiri and Caxatambo (*Ruiz & Pavón*, part type). Río Chillón, *Pennell 14476*.

Malesherbia tubulosa (Cav.) Macbr. Candollea 5: 393. 1934. *Gynopleura tubulosa* Cav. Icon. 4: 52. 1797. *M. cylindrostachya* Urb. & Gilg, Bot. Jahrb. 37: 592. 1906.

Stems strict, densely and softly short-ashy-pilose, leafless below but marked by the bases or remains of the numerous leaves, these oblong-linear, cuneate at base, acute, appressed hirsute-pilose, unequally and crisply serrate, to several cm. long, 4–8 mm. wide, the upper gradually reduced where bract-like and partly concealed in the elongate spike-like racemes of reddish-tinged ochre colored flowers; calyx narrowly cylindrical to 3 cm. long, 5–6 mm. broad, pilose, the lobes lanceolate, acute, 4–5 mm. long; petals narrowly ovate, scarcely 3 mm. long, the crown erect, deeply undulate, 1.5 mm. high; filaments to 1 cm. exserted; ovary stiped, the 3–4 styles to 2 cm. exserted; tips of capsule valves exserted; seeds oval, striate both across and lengthwise.—Well-developed plants half-shrubs to 1 meter high. Part of the material at Madrid labeled recently as by Née is referable to *M. thyrsiflora* but, as indicated by Cavanilles' name and by a specimen by Née in Cav. manuscript at Geneva the application of his name is as interpreted here. F.M. Negs. 2450 (*cylindrostachya*); 24124.

Huánuco: (*Haenke*).—Lima: Above Matucana (*Ball*). In rock detritus, 1,700 meters, above St. Bartholomé, *Weberbauer 1690*, type *M. cylindrostachya*. Purruchucho, *Née* (type, as at Geneva); also between Obrajillo and San Buenaventura, *Née* (Madrid).

Malesherbia turbinea Macbr. Field Mus. Bot. 4: 118. 1927.

Apparently allied to *M. haemantha* (only flowering branches known); calyx 12–15 mm. long, 7 mm. broad, sparsely pilose; crown 13 mm. high, irregularly denticulate-crenate; sepals 8–9 mm. long; pedicels nearly 15 mm. long; stamens scarcely exserted; capsules pilose, little exserted; seeds obscurely transversely but strongly longitudinally striate, about 1 mm. wide, nearly 2.5 mm. long.—Flowers blood-red, the anthers apparently white or yellowish. The upper bract-like oblong-ovate leaves are merely crenate. Each leaf-crenation is tipped with one long cilium.

Tacna: In rainy green shrubs and Cereus, Candarave, *Weberbauer 7364*, type.

Malesherbia Weberbaueri Gilg, Bot. Jahrb. 50: Beibl. 111: 11. 1913.

Densely appressed silky-villous simple-stemmed shrub with crowded linear-lanceolate sessile leaves and long terminal racemes of leafy bracted greenish yellow or reddish tinged subtubular flowers; leaves subentire or obscurely crenate-serrulate, 8–12 cm. long, about 1 cm. wide, acute base and apex; calyx 3.5–4 cm. long, 8–10 mm. wide, sepals lanceolate, acuminate, 7–8 mm. long, 2 mm. wide at base, the petals shorter and narrower; crown irregularly and slightly dentate; capsule included or barely exserted; seeds minutely and obscurely striate.—To about 1 meter high in steep, loose, rocky soils. Species distinctive in its closely appressed sericeous pubescence. F.M. Neg. 2460.

Huancavelica: Valley of the Huarpa, *Weberbauer 5672*, type.

PASSIFLORACEAE. Passionflower Family

By E. P. Killip, United States National Museum

References: Masters in Mart. Fl. Bras. 13, pt. 1. 1872; Killip in Field Mus. Bot. 19. 1938.

Passifloraceae consists of 12 genera, four of which are found in the New World. By far the largest genus is *Passiflora*, which has about 400 species, nearly 360 of them being endemic to the New World. The flowers of most of the species occurring in Peru

are very showy, and their structure is highly complicated. The names commonly applied to passionflowers in Peru are "granadilla," "niorbo," and "tumbo." "Tumbo," "tintin" and "apincoya" are Quechua names (Cook).—Herrera has recorded the native name "inti sisa," but has by error associated it with a Brazilian species.

Stamens 5, in the Peruvian species borne on a well-developed gynophore; sepals 5; petals (if present) 5 ..... 1. *Passiflora.*

Stamens 8 or 10, inserted on the floor of the calyx; sepals and petals normally 4 ..... 2. *Dilkea.*

1. PASSIFLORA L.

Herbaceous or woody vines or scandent shrubs, usually climbing by tendrils, rarely (one Peruvian species) small trees or erect shrubs; leaves alternate, petiolate, simple or compound, lobed or unlobed, the petiole often glanduliferous; inflorescence axillary, simple or occasionally compound; bracts usually present, scattered or forming an involucre; calyx tube patelliform, campanulate, funnelform, or cylindric; sepals 5; petals 5, alternate with the sepals, sometimes wanting; corona of 1 to several series of distinct or more or less united filaments; operculum borne within the corona, membranous, flat or plicate, entire or filamentose; stamens 5, the filaments monadelphous in a tube closely adnate to a gynophore, distinct above, the anthers 2-celled; ovary borne on a gynophore; styles 3, the stigmas capitate; fruit indehiscent, containing a mucilaginous pulp; seeds borne on 3 parietal placentae, more or less compressed, reticulate, punctulate, or transversely grooved.

Passiflora rosea, probably a hybrid, has an abnormal genital structure, and the above description does not apply to it.

A. Ovary 3-angled, broadly truncate at apex, the styles projecting from the top of the angles; trees, shrubs, or woody vines, without tendrils or with weak ones; leaves simple, unlobed, entire; bracts and stipules setaceous, soon deciduous.

Calyx tube campanulate or cylindric-campanulate, shorter than the sepals; flowers white or greenish.

Peduncles terminating in a tendril ..... *P. cirrhipes.*

Peduncles not terminating in a tendril.

Erect shrub or a tree; peduncles once-furcate .. *P. frutescens.*

Scandent shrubs; peduncles simple.

Corona filaments in about 6 series; leaves rounded or obtuse, coriaceous, strongly nerved ..... *P. costata.*

Corona filaments in 2 series; leaves mostly acute, not strongly nerved, membranous..... *P. Tessmannii.*

Calyx tube cylindric, longer than the sepals (subequal in *P. cauliflora*); flowers red, yellow, or orange, in short fascicles or in racemes.

Inflorescence fasciculate; operculum cleft into 5 linear segments.

Calyx tube less than 2.5 cm. long; ovary pubescent; leaves coriaceous..... *P. cauliflora.*

Calyx tube about 3 cm. long; ovary glabrous; leaves membranous..... *P. skiantha.*

Inflorescence racemose; operculum filamentose, at least part way.

Calyx tube puberulent; leaves ovate or ovate-oblong. *P. pyrrhantha.*

Calyx tube glabrous; leaves oblong..... *P. spinosa.*

A. Ovary terete or subangular, not definitely 3-angled, acute or rounded, the styles projecting from the center of the top of the ovary, or the ovary tapering to the styles; herbaceous or sometimes woody vines, usually with well developed tendrils.

Tendrils of 2 forms, one axillary on the main stem, the other on one of each pair of peduncles..... *P. heterohelix.*

Tendrils, if present, all axillary.

Petiolar glands globose, 3–4 mm. wide, with a stipe 6–8 mm. long; bracts borne at middle of peduncle, lacerate. *P. adenopoda.*

Petiolar glands smaller or wanting; bracts scattered along peduncle or forming an involucre near base of flower, wanting in *P. rubra.*

B. Bracts linear-subulate or setaceous, less than 1 mm. wide, scattered along the peduncle; flowers usually not more than 5 cm. wide and not highly colored; operculum plicate.

Petiolar glands present; seeds reticulate.

Petals none.

Leaves prevailingly transverse-oblong, much broader than long, the glands sessile, borne at or below the middle of the petiole..... *P. coriacea.*

Leaves prevailingly 3-lobed (in Peruvian plants), longer than broad, the glands borne above the middle of the petiole..... *P. suberosa.*

Petals present.

Leaves membranous, pubescent, dentate or denticulate, 3-lobed to below the middle, the petioles biglandular near the apex; ovary densely pilose..... *P. morifolia.*

Leaves coriaceous, essentially glabrous, entire, 3-lobed not more than to the middle, the petioles biglandular near the base; ovary glabrous..... *P. Lobbii.*

Petiolar glands none, though in 2 species the petioles with auricular appendages near their base; seeds transversely sulcate.

Bracts none; fruit elongate-obovoid; seeds with smooth ridges. *P. rubra.*

Bracts present; fruit globose or fusiform; seeds with rugulose ridges.

Leaves narrowly lanceolate to ovate-lanceolate, unlobed or with 2 reduced lateral lobes.

Peduncles 2-flowered; petioles without auricular appendages..... *P. quadriflora.*

Peduncles 1-flowered; petioles with 2 auricular appendages at or below the middle.

Plant glabrous or cinereous-pubescent; fruit globose, not more than 1.5 cm. in diameter.. *P. auriculata.*

Plant ferruginous-tomentose; fruit broadly ovoid, more than 1.5 cm. in diameter..... *P. ferruginea.*

Leaves 2–3-lobed or, if subentire, broader than long.

C. Inner corona filaments linear, broadly dilated at the apex and often lobulate.

Ovary densely cano-tomentose..... *P. leptoclada.*

Ovary glabrous.

Leaves 3-lobed a third to a half their length, the lobes ascending, acute or subacute.

Leaves coriaceous or subcoriaceous, lustrous above, green beneath..... *P. tricuspis.*

Leaves membranous, dull above and fasciate along the nerves, reddish beneath..... *P. trifasciata.*

Leaves 2-lobed, the lobes widely divergent (hence leaves transversely oblong), occasionally with a small intermediate lobe present.

Petals none; sepals broadly ovate; ovary ovoid. *P. Poeppigii.*

Petals present; sepals linear-lanceolate; ovary fusiform. *P. amalocarpa.*

C. Inner corona filaments filiform, capillary.

Leaves distinctly longer than broad, shallowly bilobate, densely pilosulous beneath..... *P. bauhinifolia.*

Leaves broader than long or the length along the midnerve subequal to the greatest width, glabrous or pulverulent beneath.

Ovary white-sericeous; leaves finely pulverulent beneath. *P. Candollei.*

Ovary glabrous; leaves glabrous or very sparingly pubescent beneath.

Peduncles more than 4 cm. long; outer corona filaments falcate, conspicuously dilated near the middle. *P. punctata.*

Peduncles less than 4 cm. long; outer corona filaments straight, not dilated.

Fruit ellipsoidal, 6-ribbed, stipitate; leaves membranous; sepals thin-transparent..... *P. tenella.*

Fruit globose or subglobose; leaves coriaceous; sepals rather fleshy.

Leaves truncate or subtruncate along the upper margin; flowers 4–5 cm. wide; outer corona filaments 1 cm. long or more..... *P. vespertilio.*

Leaves distinctly 3-lobed, the lobes subequal; flowers 1.5–2 cm. wide; outer corona filaments much less than 1 cm. long..... *P. obtusiloba.*

B. Bracts usually foliaceous, more than 1 mm. wide, ovate, lanceolate, or cordate (occasionally narrowly linear and very narrow in *P. quadriglandulosa*), forming an involucre near base of flower, sometimes coalescent part way; flowers usually more than 5 cm. wide and highly colored; operculum not plicate.

D. Calyx tube long-cylindric, longer than the sepals; corona 1- or 2-ranked, usually reduced to tubercles.

Leaves not lobed, lanceolate..... *P. lanceolata.*

Leaves 3-lobed or 3-foliolate.

Leaves 3-foliolate..... *P. trifoliata.*

Leaves 3-lobed.

Bracts free to the base.

Plant glabrous; stipules setaceous; leaves not more than 5 cm. long; corona a sinuate ridge. *P. gracilens.*

Plant pubescent; stipules pinnatisect or deeply cleft; leaves fully 5 cm. long; outer rank of corona short-filamentose..... *P. pinnatistipula.*

Bracts united part way.

Stipules narrowly linear..... *P. Matthewsii.*

Stipules oblong, ovate, or subreniform.

Flowers violet, the tube not more than 3.5 cm. long; plant glabrous..... *P. glaberrima.*

Flowers red or pink, the tube more than 3.5 cm. long; plants glabrous or pubescent.

Leaves small, less than 4 cm. long and 6 cm. wide; peduncles very slender..... *P. parvifolia.*

Leaves larger; peduncles stout.

Involucre about two-thirds the length of the calyx tube..... *P. macrochlamys.*

Involucre not two-thirds the length of the calyx tube, usually less than half.

Stipules more than 2.5 cm. long; leaves thick-coriaceous, lustrous above; plant glabrous..... *P. anastomosans.*

Stipules less than 2.5 cm. long; leaves membranous or subcoriaceous, rarely coriaceous; plants usually pubescent.

Petioles 2- or 3-glandular at the middle, the glands at least 1.5 mm. long. *P. mesadenia.*

Petioles 4–12-glandular, the glands less than 1.5 mm. long, scattered.

Stem terete, yellow-pubescent; calyx tube glabrous..... *P. mollissima.*

Stem angular, glabrous or grayish pubescent; calyx tube glabrous or pubescent..... *P. mixta.*

D. Calyx tube campanulate to short-cylindric, usually much shorter than the sepals; corona in 3 or more ranks, or if 2-ranked, the inner rank tubular.

Leaves 3-foliolate.

Plant glabrous; bracts lacerate-serrate.....*P. Weberbaueri.*

Plant densely tomentose; bracts deeply laciniate-fimbriate. *P. trisecta.*

Leaves simple, unlobed or variously lobed.

Bracts and stipules deeply pinnatisect into filiform, gland-tipped divisions; plant often viscous, ill-scented.

Seeds more than 6 mm. long and 3 mm. wide; lateral leaf lobes ascending; plant densely rufo-hirsute. *P. vestita.*

Seeds smaller; lateral leaf lobes usually divergent. *P. foetida.*

Bracts and stipules not pinnatisect.

E. Operculum dependent, the margin not recurved.

Stipules semi-ovate or subreniform, serrate, persistent; leaves 3-lobed; corona filaments of each rank distinct to base.

Flowers red; peduncles rarely more than 8 cm. long; bracts free, or united only at base.....*P. manicata.*

Flowers white; peduncles 10–15 cm. long; bracts united halfway.....*P. pedunculariis.*

Stipules linear or setaceous, deciduous; leaves lobed or unlobed; corona filaments of the inner rank united part way into a tube.

Two outer ranks of corona filaments purple at apex, white at base; leaves never lobed; bracts ovate, at least 1 cm. wide.....*P. coccinea.*

Two outer ranks of corona filaments red or white; leaves often polymorphic, unlobed to 3-lobed; bracts usually narrower.

Plant essentially glabrous.....*P. quadriglandulosa.*

Plant ferruginous-tomentose.....*P. vitifolia.*

E. Operculum erect or horizontally spreading, not dependent.

Calyx tube cylindric, subequal to the sepals; sepals and petals red; peduncles 10–16 cm. long, very slender. *P. tarapotina.*

Calyx tube campanulate or broadly short-tubular, much shorter than the sepals; sepals and petals variously colored, red only in *P. alata;* peduncles usually much less than 10 cm. long.

Stem quadrangular, the angles winged; seeds more than 5 mm. wide.

Petioles 6-glandular; leaf nerves 10 or more to a side; stipules ovate to lance-ovate...*P. quadrangularis.*

Petioles 2–4-glandular; nerves about 8 to a side; stipules linear or linear-lanceolate.....*P. alata.*

Stem terete or angular, the angles not winged; seeds not more than 5 mm. wide.

Leaves palmately 5–9-lobed to below the middle (rarely a few 3-lobed leaves in *P. caerulea*).

Stipules linear-subulate; bracts united in the lower part; leaf lobes serrulate..*P. serrato-digitata.*

Stipules semi-ovate; bracts free to the base; leaf lobes entire.....*P. caerulea.*

Leaves unlobed or 3-lobed.

Stipules linear or setaceous, often soon deciduous; leaves not lobed.

Ovary glabrous.....*P. nitida.*

Ovary sericeo-tomentose.

Outermost rank of corona filaments shorter than the second rank; flowers solitary in the axils or in pairs.....*P. laurifolia.*

Outermost rank of corona filaments as long as the second rank; flowers borne on short, axillary branches.....*P. riparia.*

Stipules ovate to oblong.

Bracts united, at least toward the base, more than 2 cm. long.

Petiolar glands liguliform, often appearing filiform when dry, at least 3 mm. long.
P. ligularis.

Petiolar glands not liguliform, shorter, sessile or short-stipitate.

Leaves minutely denticulate, usually 3-lobed; corona 3-ranked.....*P. triloba.*

Leaves entire at margin, never lobed; corona about 5-ranked.....*P. tiliaefolia.*

Bracts free to the base, usually less than 2 cm. long; stipules semi-ovate to semi-oblong,

attached on one side above the base, hence often appearing reniform.

Plant glabrous throughout.

Leaves suborbicular in general outline, 3-lobed at the apex; bracts imbricate, unequal, one smaller than the others and borne a short distance below them. *P. cuzcoensis.*

Leaves lanceolate or deeply 3-lobed; bracts verticillate.

Leaves lanceolate, not lobed. . *P. loretensis.*

Leaves 3-lobed.

Leaves peltate at least 5 mm. from the lower margin, 10–20 cm. wide. *P. spectabilis.*

Leaves not peltate.

Sepals dorsally awned with a foliaceous awn 5 mm. long or more; flowers 6–9 cm. wide. *P. subulata.*

Sepals merely mucronulate; flowers 3–5 cm. wide. . . . . *P. aristulata.*

Plant hispid-hirsute throughout.

Ovary glabrous; bracts narrowly lanceolate or elliptic-lanceolate, less than 5 mm. wide, minutely glandular-denticulate. *P. menispermifolia.*

Ovary pubescent; bracts ovate or ovate-lanceolate, more than 5 mm. wide, serrate or entire.

Leaves ovate or ovate-lanceolate, entire or lobulate near base; petiolar glands not more than twice longer than thick. *P. crassifolia.*

Leaves 3-lobed; petiolar glands more than twice longer than thick. . *P. nephrodes.*

Passiflora adenopoda DC. Prodr. 3: 330. 1828. *P. acerifolia* Schlecht. & Cham. Linnaea 5: 89. 1830.

Stem glabrate or hispidulous; stipules semi-orbicular, about 1.5 cm. wide; petioles conspicuously biglandular toward the base, the

glands globose, 2–4 mm. in diameter, with a slender stipe 6–8 mm. long; blades 7–12 cm. long, 8–15 cm. wide, 3–5-lobed, deeply cordate, entire or denticulate, hispidulous; peduncles solitary or in pairs, bearing near the middle 3 lanceolate or oblong, lacerate bracts 7–10 mm. long, 4–6 mm. wide; flowers up to 7 cm. wide, whitish or yellowish; sepals oblong-lanceolate, terminating in a conspicuous horn; petals linear-lanceolate, much shorter than the sepals; corona filaments in a single series, filiform, 1.5–2 cm. long, white, purple-banded; ovary densely brown-tomentose; fruit globose, 2–2.5 cm. in diameter; seeds reticulate.

Junín: La Merced, 900 meters, *5561*. Mexico to Venezuela: foothills and lower mountain slopes, 900 to 1,600 meters.

Passiflora alata Dryand. Bot. Mag. 2: *pl. 66*. 1788. *P. latifolia* DC. Prodr. 3: 328. 1828. *P. alata* var. *latifolia* Mast. Trans. Linn. Soc. 27: 635. 1871.

Plant glabrous throughout; stem stout, quadrangular, the angles winged; stipules linear or linear-lanceolate; petioles 2–4-glandular, the glands orbicular, sessile; blades ovate or ovate-oblong, 8–15 cm. long, 7–10 cm. wide, entire or minutely denticulate, penninerved, the principal secondary nerves 7 or 8 to a side, the upper ones distant; bracts ovate, about 1.5 cm. long; flowers 10–12 cm. wide, crimson or carmine, the corona filaments variegated with red, white, and purple; sepals and petals oblong; corona 4-ranked; fruit obovoid or pyriform, 8–10 cm. long.

Loreto: Iquitos, 100 meters, *Killip & Smith 27468*.—Without locality: *Dombey* (or *Pavón?*) *738*, type of *P. latifolia*. Perhaps introduced into Peru from eastern Brazil, where apparently indigenous.

Passiflora amalocarpa Barb. Rodr. Vellosia 1: 29. *pl. 12*. 1888; ed. 2. 1: 25. 1891; 3, pt. 1: *pl. 12*. 1891.

Plant glabrous throughout; stipules narrowly linear, subfalcate; petioles glandless; blades membranous, transversely oblong or transversely linear-oblong in general outline, 3-lobed or sometimes truncate at upper margin, 1–4 cm. along midnerve, 3.5–6.5 cm. along lateral nerves, 7–12 cm. wide, the middle lobe usually well developed, truncate or rounded; peduncles solitary, up to 5 cm. long; bracts linear-setaceous; flowers 3.5–4 cm. wide, apparently greenish white; sepals linear-lanceolate; petals linear, about half as long as the sepals; corona 2-ranked, the outer filaments filiform, subequal to the petals, the inner narrowly linear, 2–3 mm. long, capitate and emargi-

nate; operculum closely plicate; ovary fusiform; fruit fusiform, 3.5–4 cm. long, 1–1.5 cm. in diameter; seeds transversely sulcate.

Loreto: Lower Río Nanay, *Williams 526*. Known otherwise only from the type locality, Manaos, Brazil.

Passiflora anastomosans (Lambert) Killip, Journ. Wash. Acad. Sci. 17: 428. 1927. *Tacsonia anastomosans* Lambert ex DC. Prodr. 3: 335. 1828.

Plant essentially glabrous throughout; stipules semi-ovate, about 3 cm. long, aristulate; petioles 2–4-glandular near the apex, the glands sessile; blades 7–9 cm. long, 7–12 cm. wide, 3-lobed about to the middle, callous-serrate, conspicuously reticulate-veined, thick-coriaceous, very smooth and lustrous above; peduncles 2.5–3 cm. long; bracts 6–7 cm. long, connate one-half to two-thirds their length; calyx tube cylindric, 8–9 cm. long; sepals and petals oblong-lanceolate; corona minutely tuberculate; fruit ovoid-ellipsoidal.

Huánuco: Pozuzo, *Pavón*, type.

Passiflora aristulata Mast. in Mart. Fl. Bras. 13, pt. 1: 570. 1872.

Plant glabrous; stipules cordate or semicordate, aristulate; petioles filiform, biglandular near the middle; blades 3-lobed about to the middle, 3–4 cm. long, 4–6 cm. wide, the lobes broadly oblong-ovate, obtuse, subequal; bracts broadly ovate, about 1 cm. long, borne at base of flower; flowers 3–4.5 cm. wide, greenish white; calyx tube campanulate; sepals oblong, dorsally mucronulate; petals ovate-oblong; corona filaments light purple, in 4 series, the outer 2 filiform, the inner ones narrowly linear, subclavate; operculum fimbriate in the upper half; ovary ovoid; fruit edible.

San Martín: Tarapoto, *Spruce 3988*, type. Juanjuí, *Poeppig* in 1830.—Loreto: Lower Río Huallaga, 200 meters, *Williams 5180*. Rancho Indiana, Río Marañón, 110 meters, *Mexia 6424*. "Sandía."

Passiflora auriculata HBK. Nov. Gen. & Sp. 2: 131. 1817. *P. cinerea* Poepp. & Endl. Nov. Gen. & Sp. 2: 57. *pl. 177*. 1838.

Stem glabrous or finely pubescent; stipules filiform; petioles up to 2 cm. long, bearing close to the base 2 auricular appendages about 2 mm. wide; blades prevailingly ovate-lanceolate in general outline, 5–15 cm. long. 2–10 cm. wide, subentire or undulately or angulately 3-lobed, acuminate, glabrous above, glabrate or cinereous-pubescent beneath; peduncles in pairs, up to 1 cm. long; bracts setaceous; flowers 2–2.5 cm. wide; sepals narrowly oblong-lanceolate,

yellowish green or pale greenish; petals linear, about half as long as the sepals, white; corona 2-ranked, the outer filaments filiform, yellowish green, purple at the base, the inner capitellate, white; operculum closely plicate; ovary pilosulous; fruit globose, 1–1.5 cm. in diameter; seeds obovate, transversely grooved.

San Martín: Tarapoto, *Ule 9644.*—Loreto: Mainas, *Poeppig 1790* (type of *P. cinerea*), *2302.* Yurimaguas, 135 meters, *Killip & Smith 27589, 28047, 28311, 29035; Williams 4226, 7873.* Iquitos, 100 meters, *Klug 141; Mexia 6388.* Río Marañón, *Tessmann 4933.* Balsapuerto, 220 meters, *Klug 2933.*—Junín: Puerto Yessup, 400 meters, *Killip & Smith 26336.* Nicaragua to the Guianas and Amazonian Brazil and Bolivia.

Passiflora bauhinifolia HBK. Nov. Gen. & Sp. 2: 132. 1817.

Stem softly pubescent; stipules linear-subulate, subfalcate, purplish; petioles glandless; blades oblong or ovate-oblong in general outline, 5–9 cm. long, 4–6.5 cm. wide, shallowly lobate, glabrescent above, sparingly or densely appressed-pilosulous beneath; peduncles solitary or in pairs; bracts linear-setaceous, purplish; sepals oblong-lanceolate, about 1 cm. long; petals ovate-lanceolate, half as long as the sepals, white; corona filaments in 2 poorly marked series, the outer narrowly liguliform, almost filiform, subtrigonous, the inner capillary; operculum plicate; ovary densely villous; fruit globose, about 1 cm. in diameter; seeds transversely 6- or 7-sulcate. —F.M. Neg. 16521.

Cajamarca: Huambo, *Raimondi 2233.* Ecuador.

Passiflora caerulea L. Sp. Pl. 959. 1753.

Plant glabrous and often glaucous throughout; stipules semi-ovate; petioles 2–6-glandular, the glands stipitate; blades palmately 5 (rarely 3, 7, or 9) -lobed nearly to the base, the lobes linear-oblong to broadly ovate-oblong, up to 10 cm. long, usually obtuse, entire; bracts broadly ovate, 1.5–2.5 cm. long, borne close to the flower base; flowers up to 10 cm. wide, white or pinkish; calyx tube cup-shaped, the sepals and petals oblong; corona filaments in 4 series, those of the 2 outer radiate, from a half to as long as the petals, blue at the apex, white at the middle, purple at the base, the inner filaments much shorter; operculum filamentose part way; fruit ovoid or subglobose, about 4 cm. in diameter; seeds coarsely reticulate.

Lima: Lima Botanical Garden, *Killip & Smith 21530.*—Tacna: Tacna, cultivated, *Rusby 489.*—Without locality: *Dombey 740.* A native of east-central Brazil to Argentina, widely cultivated.

Passiflora Candollei Tr. & Planch. Ann. Sci. Nat. sér. 5. 17: 161, footnote. 1873. *P. lunata* Juss. ex DC. Prodr. 3: 331. 1828, not *P. lunata* J. E. Sm. or Poepp. & Endl.

Stem usually finely pulverulent; stipules linear-subulate, falcate, coriaceous; petioles glandless; blades 5–10 cm. along midnerve, 7–15 cm. along lateral nerves, 7–15 cm. wide, bilobed (lobes lanceolate, acuminate, the sinus broadly lunate, with an intermediate lobe sometimes present, or the upper margin subtruncate), bright green, lustrous, and glabrous above, dull and finely pulverulent beneath; bracts setaceous; flowers 3–5 cm. wide; sepals broadly oblong, fleshy, white within; petals ovate-oblong, white, pink-tinged; corona 2-ranked, the outer filaments 8–10 mm. long, subtrigonous, yellow, the inner filiform, much shorter, minutely capitellate, light green; operculum closely plicate; ovary white-sericeous; fruit globose, 1.5–2 cm. in diameter; seeds transversely sulcate.

Amazonas: Chachapoyas, *Mathews.*—Loreto: Iquitos, 100 meters, *Killip & Smith 27143, 27438; Williams 8070, 8180.* Río Itaya, *Killip & Smith 29375, 29503, 29693, 29734, 29735; Tessmann 5273.* Mishuyacu, *Klug 1306, 1581, 2521.* Mouth of Río Santiago, *Tessmann 4942.* Lower Río Huallaga, *Williams 4175; Killip & Smith 27825.* Fontaleza, *Klug 2788.* Río Paranapura, *Klug 3945.*—Huánuco: Pampayacu, 1,100 meters, *5123.* Río Cayumba, 1,100 meters, *Mexia 8213.* Chinchao, *Ruiz & Pavón.*—Junín: La Merced, 700 meters, *Killip & Smith 23517.* Colonia Perené, 680 meters, *Killip & Smith 25000, 25423.* Puerto Yessup, 400 meters, *Killip & Smith 26308.* Puerto Bermúdez, 375 meters, *Killip & Smith 26607.*—Department uncertain: Hacienda Chalhuapuquio, *Stevens 146.*—Without locality: *Dombey 742,* type; *Pavón.* Known also from a single Bolivian collection.

Passiflora cauliflora Harms, Verh. Bot. Ver. Brandenb. 48: 185. 1907.

Scandent shrub, glabrescent throughout except the ovary; leaves oblong, 15–18 cm. long, 6–10 cm. wide, obtusely acuminate or acute, entire, coriaceous, with a dark, thickened band at the margin; flowers "brown-yellow" (Klug), borne in short axillary fascicles; calyx tube cylindric, 1.5–2 cm. long; sepals and petals oblong, 1.5–2.5 cm. long; corona filaments in 3 series, the outermost subdolabriform, nearly 1.5 cm. long, the others narrowly linear, much shorter; operculum erect, cleft in the upper third into 5 linear segments; ovary narrowly obovoid, softly ferruginous-tomentellous.—F.M. Neg. 16522.

San Martín: Zepelacio, 1,600 meters, *Klug 3469*.—Loreto: Cerro de Escalera, near Tarapoto, 1,300 meters, *Ule 6679*, type. Mouth of Río Santiago, *Tessmann 4588*. Recently collected also at Manaos, Brazil, by A. Ducke.

Passiflora cirrhipes Killip, Field Mus. Bot. 19: 522. 1938.

Woody vine, glabrous throughout except the ovary; leaves ovate or oblong-ovate, 5–9 cm. long, 4–5.5 cm. wide, sharply acuminate, membranous; peduncles slender, bifurcate, terminating in a reduced or a well-developed tendril, flowers white; calyx tube cylindric-campanulate, up to 1 cm. long; sepals linear-oblong, about 1.5 cm. long; petals spatulate; corona filaments in 3 series, erect, the outermost subdolabriform, yellow; operculum fimbriate about halfway; ovary rufo-tomentose.

San Martín: Zepelacio, near Moyobamba, 1,100–1,600 meters, *Klug 3883*, type.

Passiflora coccinea Aubl. Pl. Guian. 2: 828. *pl. 324*. 1775.

Plant rufo-puberulent or rufo-tomentose nearly throughout; stipules narrowly linear, entire or minutely glandular-serrulate; petioles glandless, or biglandular at the base; blades oblong, 6–14 cm. long, 3–7 cm. wide, not lobed, subcordate, duplicate-serrate or crenate, glabrous or sparingly pubescent above, ferruginous- or cano-tomentose beneath; peduncles up to 8 cm. long; bracts ovate, up to 6 cm. long, 1–3.5 cm. wide, free to base, coriaceous, crenate or sharply serrate, usually glandular at the margin, reddish; flowers scarlet or red; calyx tube short-cylindric-campanulate, up to 2 cm. long; sepals linear-lanceolate, 3–5 cm. long; petals linear; corona in 3 series, the 2 outer consisting of subulate filaments about 1 cm. long, purple above, pink or white below, the inner rank tubular, filamentose only at the margin, white; ovary yellowish-tomentose; fruit subglobose or ovoid, about 5 cm. in diameter; seeds minutely reticulate.

San Martín: Lamas, 840 meters, *Williams 5069, 6379*.—Loreto: Masisea, 275 meters, *Killip & Smith 26851*. Yurimaguas, 135 meters, *Killip & Smith 27574, 27995, 29062; Williams 4745, 7821*. Lower Río Huallaga, 155–210 meters, *Williams 3894, 3917, 4145*. Río Marañón Valley, 150 meters, *Killip, Smith, & Dennis 29186, 29214*. Río Pastaza, *Tessmann 3787*. Río Ucayali, *Huber 1411, 1486; Tessmann 3187*.—Junín: Puerto Yessup, 400 meters, *Killip & Smith 26290*. Puerto Bermúdez, 375 meters, *Killip & Smith 26673*. Cahuapanas, 340 meters, *Killip & Smith 26820*.—Ayacucho: Kimpitiriki,

400 meters, *Killip & Smith 22909*.—Cuzco: Marcapata Valley, 1,200 meters, *Herrera 1155*.—Department uncertain: Pampa del Sacramento, *Castelnau* in 1847.—Without locality: *Weberbauer 6761*. Guianas to Peru, Bolivia, and northern Brazil. "Granadilla."

Passiflora coriacea Juss. Ann. Mus. Hist. Nat. Paris 6: 109. *pl. 39, f. 2*. 1805.

Plant essentially glabrous throughout; stipules narrowly linear; petioles 2 (rarely 4)-glandular usually below the middle, the glands sessile; blades transversely oblong, acute, rarely obtuse at the ends, 3–7 cm. long (midnerve), 7–25 cm. wide, peltate, coriaceous; upper inflorescence a terminal raceme, the lower flowers solitary or in pairs in the leaf axils; bracts setaceous; flowers 2.5–3.5 cm. wide, yellowish green; sepals oblong-lanceolate; petals none; corona filaments in 2 series, the outer ones filiform, the inner linear; operculum plicate; fruit globose, 1–2 cm. in diameter; seeds coarsely reticulate.

San Martín: Tarapoto, *Spruce 4532; Ule 6461*. Chasuta, 260 meters, *Klug 3963*. Alto Río Huallaga, *Williams 5517, 5751*—Junín: San Ramón, 1,000 meters, *Killip & Smith 24907*.—Without locality: *Haenke 1882*. Mexico to Peru and northern Bolivia; reported once from British Guiana. "Uchu anquirisi."

Passiflora costata Mast. in Mart. Fl. Bras. 13, pt. 1: 573. 1872.

A subscandent shrub with few tendrils, the branches puberulent; leaves obovate to narrowly oblong-obovate, up to 25 cm. long and 16 cm. wide, rounded and often emarginate at the apex, entire, penninerved, coriaceous, usually finely puberulent beneath; peduncles solitary or in pairs, 1-flowered; bracts narrowly linear; flowers 6–7 cm. wide, white, fragrant; calyx tube broadly campanulate or slightly funnel-shaped; sepals oblong-lanceolate, 3–4 times longer than the tube; petals oblong-spatulate; corona filaments in about 6 series, the outermost filaments 1.5–2 cm. long, orange, reddish at the middle, the others much shorter; operculum minutely denticulate; ovary narrowly ovoid, densely tomentose.

Loreto: Iquitos, *Tessmann 3675*. Soledad, *Tessmann 5286*. Guianas and the Amazon Basin.

Passiflora crassifolia Killip, Journ. Wash. Acad. Sci. 20: 380. 1930.

Stem densely villous with spreading, grayish hairs; stipules subreniform, aristate; petioles 4–6-glandular, scattered; blades lanceolate or ovate-lanceolate, 10–18 cm. long, 6–12 cm. wide, unlobed or rarely

slightly lobate below the middle, obtuse, deeply cordate, thick-coriaceous, glabrous, appressed-villous on the nerves and veins beneath; bracts lanceolate, 1.5–2 cm. long, sharp-acuminate, entire; calyx tube tubular-campanulate; sepals oblong, dorsally awned; corona filaments in 3 or 4 series, the outermost about 7 mm. long; operculum filamentose in the upper half; fruit ovoid or ellipsoidal, 4–6 cm. long, villosulous; seeds coarsely reticulate.

Junín: La Merced, 700 meters, *5371; Killip & Smith 23382, 23434*, type. Colonia Perené, 600 meters, *Killip & Smith 25181*.

Passiflora cuzcoensis Killip, Journ. Wash. Acad. Sci. 20: 379. 1930.

Plant glabrous; stipules semi-oblong, 2–2.5 cm. long; petioles biglandular in the upper third, the glands minute, subulate; blades suborbicular in general outline, 5–7 cm. long, 5- or 7-nerved, 3-lobed at the apex, the lobes rounded; peduncles slender, up to 3.5 cm. long; bracts subimbricate, unequal (one larger than the others), cordate, 2.5–3 cm. long, crenate-serrulate toward the apex; flowers about 5 cm. wide; calyx tube campanulate; sepals and petals lance-oblong, the sepals awned dorsally just below the apex, the awn foliaceous; corona filaments in 2 series, the outer radiate, about 2 cm. long, the inner filiform, up to 2 mm. long; operculum denticulate.

Cuzco: Marcapata Valley, near Chilechile, *Weberbauer 7872*, type.

Passiflora ferruginea Mast. in Mart. Fl. Bras. 13, pt. 1: 556. 1872.

Stem rufo-tomentose; stipules narrowly linear; petioles up to 5 cm. long, bearing near the middle 2 auriculate appendages; blades broadly ovate in general outline, 8–20 cm. long, 5–12 cm. wide, subangulately 3-lobed, rounded at the apex, sinuate-dentate or sinuate-denticulate, rufo-tomentose beneath; bracts setaceous; flowers 2.5–3 cm. wide, otherwise similar to those of *P. auriculata;* ovary sericeo-villous; fruit broadly ovoid, about 3.5 cm. long, 2.5–3 cm. in diameter; seeds broadly obcordate, transversely grooved.

San Martín: Tarapoto, *Spruce 4901*, type. Juanjuí, Alto Río Huallaga, 400–800 meters, *Klug 4159, 4299*.

Passiflora foetida L. Sp. Pl. 959. 1753.

Stipules semi-annular about the stem, deeply cleft into filiform, gland-tipped segments; petioles glandless, though often with gland-tipped hairs; blades prevailingly 3-lobed; bracts involucrate, 2–4-

pinnatifid or -pinnatisect, the segments filiform, gland-tipped; flowers 2–5 cm. wide, white or pink (in Peruvian plants), the corona filaments white or banded with purple and white, in several series, those of the 2 outer series filiform, about 1 cm. long, the inner ones capillary, 1–2 mm. long; operculum minutely denticulate; fruit globose; seeds ovate-cuneiform, obscurely tridentate, coarsely reticulate at the center of each face.

An herbaceous, ill-scented vine, highly variable in the degree and the nature of the indument, the shape of the leaves, the laciniation of the bracts, and the size and color of the flowers. The species is widely distributed in tropical America and has been introduced into many parts of the Old World. Several varieties may be recognized, of which four, including typical *P. foetida*, have been reported from Peru. These may be keyed as follows:

Ovary pubescent; fruit sparingly to densely pubescent.

Stem, petioles, and peduncles hirsute with spreading, rather stiff, yellowish or brownish hairs averaging more than 1.5 mm. long.....*P. foetida* (typical).

Stem, petioles, and peduncles softly pilosulous, often viscous, the hairs averaging less than 1.5 mm. long.....var. *gossypifolia*.

Ovary glabrous.

Bracts small, bipinnatisect or tripinnatisect, the segments straight, or at least not closely interwoven.....var. *hirsuta*.

Bracts very large, tripinnatisect or quadripinnatisect, the segments closely interwoven.....var. *hispida*.

The typical form is known in Peru only from Juan Guerra, San Martín, 720 meters (*Williams 6843*).

Var. *gossypifolia* (Desv.) Mast.

Piura: Piura, *Spruce 6458; Gaudichaud.* Talara, *Haught 69.* Pariñas Valley, *Haught 209.*—Libertad: Pacasmayo, *Forbes* in 1912. —Lima: Chosica, 1,000 meters, *523.* Lima, *Cuming 1046; Mathews 408.*—Huánuco: María del Valle, 2,100 meters, *4954.*—Huancavelica: Mantaro Valley, below Colcabamba, 1,800–1,900 meters, *Weberbauer 6456.*—Without locality: *Dombey 737; Ruiz & Pavón; Maclean; Née: Wilkes Expedition.*

Var. *hirsuta* Mast. (*P. Baraquiniana* Lemaire).

San Martín: Tarapoto, 750 meters, *Williams 5413.*—Loreto: Contamana, 150 meters, *Killip & Smith 26870.* Iquitos, 100 meters, *Killip & Smith 27093; Klug 959, 1483.* Yurimaguas, 135–200

meters, *Killip & Smith 27828; Williams 5069, 7847; Poeppig 2173.* Lower Río Huallaga, *Williams 3962, 3977, 5112.* Río Ucayali, *Tessmann 3091, 5464.*

This variety is confined to the Amazon Basin of Peru and Brazil.

Var. *hispida* (DC.) Killip.

Túmbez: Hacienda La Choza, *Weberbauer 7690.*

Passiflora foetida is known in Peru as "bedoca" and "purupuru."

Passiflora frutescens Ruiz & Pavón ex Killip, Field Mus. Bot. 19: 527. 1938.

Erect shrub or tree, the branchlets finely puberulous; leaves ovate, oblong-ovate, or oblong-obovate, 20–25 cm. long, 12–14 cm. wide, obtuse and emarginate at the apex, cordulate, entire, penninerved, glabrous above, glaucescent and puberulent beneath; peduncles once-furcate; calyx tube funnel-shaped, about 1 cm. long; sepals and petals linear-oblong, 3–3.5 cm. long, white, densely red-spotted; outer corona filaments subdolabriform, about 1.5 cm. long, bearing just above the middle a knoblike projection.

Huánuco: Chinchao, *Ruiz & Pavón* (No. 247, Fl. Peruv. Chil. ined.), type.

Passiflora glaberrima (Juss.) Poir. in Lam. Encycl. Suppl. 2: 844. 1812. *Tacsonia glaberrima* Juss. Ann. Mus. Hist. Nat. Paris 6: 394. 1805.

Plant glabrous throughout; stipules semi-ovate, about 1 cm. long, callous-serrate; petioles conspicuously 2–4-glandular at the apex; blades coriaceous, 3–5 cm. long, 4.5–7 cm. wide, 3-lobed four-fifths their length, the lobes ovate, acute, sharply dentate, the basal ones horizontally divaricate or slightly reflexed; peduncles about 1.5 cm. long, slender; bracts about 1.5 cm. long, connate below the middle; flowers violet; calyx tube cylindric, 3.3 cm. long; sepals and petals oblong, 1–1.5 cm. long; corona reduced to a low, etuberculate ring; ovary ellipsoidal.

Piura: Páramo de Guamani, *Humboldt & Bonpland,* type.

This is the earliest described species of a small group of tacsonias with blue, violet, or magenta flowers, and with conspicuous petiolar glands. The group is widespread in Colombia and Ecuador.

Passiflora gracilens (Gray) Harms in Engl. & Prantl, Pflanzenfam. 3. 6a: 91. 1893. *Tacsonia gracilens* Gray, U. S. Expl. Exped. 639. 1854. *T. boliviana* Rusby, Mem. Torrey Club 3, pt. 3: 37. 1893. *Passiflora boliviana* Harms, Repert. Sp. Nov. 19: 28. 1923.

Plant essentially glabrous throughout; stipules setaceous; petioles very slender, glandless or with 2 small glands at the apex; blades 1–4 cm. long, 2–5 cm. wide, minutely serrulate or subentire, 3-lobed nearly to the base, the lobes narrowly ovate-oblong, the basal ones divaricate; bracts ovate, 5–8 mm. long, minutely serrulate or entire, free to the base, often early deciduous; calyx tube narrowly cylindric, 1.5–2 cm. long, 3–5 mm. in diameter (small for tacsonias), green at base, pink above without, bluish green within; sepals and petals oblong-lanceolate, 8–20 mm. long, bright pink; corona reduced to a shallowly sinuate, purplish ring; fruit ovoid, 2–3.5 cm. long; seeds cuneate, reticulate.

Huánuco: Huariaca, *Mathews 915*, type.—Junín: Ingahuasi, Mantaro Canyon, 3,150 meters, *Killip & Smith 22177*.—Huancavelica: Iscuchaco, Mantaro Valley, *Weberbauer 5679; Raimondi 11585*.—Cuzco: *Herrera 487*. Paucartambo, 3,300–3,500 meters, *Balls 6682; Pennell 14170*. Colquipata, 3,300 meters, *Pennell 13791*, Hacienda Ccapana, 3,450 meters, *Herrera 1061*. Hacienda Fanccac, 2,760 meters, *Herrera 2108*. Oropeza Valley, 3,400 meters, *Herrera 2599*. Hacienda Cutija, 2,500 meters, *Bues* (*Herrera 2126*). Huasao, *Herrera 3101*. Ollantaitambo, 2,800 meters, *Herrera 3342*. Urubamba Valley, *Herrera 1660, 2243*. Calca, *Vargas 154*. Also in the mountains of Bolivia. "Jukucha-jampajhuai," "pichincho-jampajhuai" (Inca).

Passiflora heterohelix Killip, Field Mus. Bot. 19: 563. *f. 2a*. 1938.

Plant glabrous throughout; tendrils slender, of 2 forms, one axillary on the main stem, the other on one of each pair of peduncles; stipules setaceous; petioles biglandular just below the apex; blades oblong or oblong-lanceolate, 4–11 cm. long, 1.5–5 cm. wide, cuspidate-acuminate, entire, penninerved, coriaceous; peduncles 1-flowered, in pairs, one simple, ecirrhose, the other bifid, with one branch floriferous and the other a tendril; bracts narrowly ovate, 2–3 cm. long, free to the base; calyx tube barely 1 mm. long; sepals elliptic-ovate, about 1.5 cm. long; petals slightly shorter than the sepals; corona consisting of a few linear filaments 2–3 mm. long, apparently in a single series; ovary narrowly ellipsoidal.

Loreto: Tarapoto, 750 meters, *Williams 5902*, type. This may represent an undescribed genus; at least, it has no close relative in *Passiflora*. Final decision must await the collecting of better developed flowers.

Passiflora lanceolata (Mast.) Harms, Bot. Jahrb. 18: Beibl. 46: 11. 1894. *Tacsonia lanceolata* Mast. in Mart. Fl. Bras. 13, pt. 1: 536. 1872. *Passiflora acutissima* Killip, Journ. Wash. Acad. Sci. 17: 428. 1927.

Stem pilosulous; stipules lanceolate, 1–1.5 cm. long, deeply pinnatisect; petioles minutely biglandular at the apex; blades lanceolate, 4–8 cm. long, 1–1.5 cm. wide, attenuate-acuminate, subrevolute, coriaceous, glabrous; peduncles about 5 cm. long; bracts lanceolate, 1.5–2 cm. long, free to the base, laciniate; calyx tube cylindric, 7–8 cm. long, glabrous; sepals oblong, 3–3.5 cm. long, dorsally aristate; petals similar and subequal to the sepals; corona apparently tuberculiform; ovary glabrous.

Peru: Without locality, *Mathews 1252*, type. The nearest relatives of this are Colombian or Venezuelan species.

Passiflora laurifolia L. Sp. Pl. 956. 1753.

Plant glabrous except the ovary and bracts; stipules narrowly linear; petioles biglandular just below the apex; blades oblong or ovate-oblong, 6–12 cm. long, 3.5–8 cm. wide, rounded to subacute, entire, thick-coriaceous; bracts ovate-oblong, 2.5–4 cm. long, glandular-serrate toward the apex, puberulent; flowers 5–7 cm. wide; calyx tube cylindric-campanulate, up to 1 cm. long; sepals and petals oblong, red or purplish red; corona filaments banded with red, blue, violet, or purple, and white, in 6 series, the outermost about 2 cm. long, the second series, 3–4 cm. long, those of the succeeding series much shorter; operculum minutely denticulate; ovary sericeo-tomentose; fruit ovoid, 5–8 cm. long, edible; seeds finely reticulate.

Loreto: Tarapoto, 360 meters, *Ule 6337, 6545*.—Huánuco: Chicoplaya, *Ruiz & Pavón*. Common in the West Indies and the Guianas; rare in Venezuela and northern Brazil. "Granadilla."

Passiflora leptoclada Harms, Notizbl. Bot. Gart. Berlin 9: 979. 1926.

Plant glabrous throughout except the ovary; stipules linear-setaceous; petioles glandless; blades membranous, transversely elliptic or transversely oblong in general outline, truncate or shallowly 3-lobed at the apex, 1.5–4 cm. along the midnerve, 2.5–4 cm. along the lateral nerves, 4–7 cm. wide, the lobes obtuse or rounded; peduncles in pairs; bracts subulate; flowers up to 3 cm. wide, apparently greenish white; sepals narrowly oblong; petals similar to the sepals but shorter; corona 2-ranked, the outer filaments filiform, subequal to the sepals, the inner linear, 3–4 mm. long, broadly

capitate and emarginate; operculum closely plicate; ovary ovoid, densely cano-tomentulous; fruit about 1.5 cm. in diameter; seeds transversely sulcate.—Close to the widely distributed *P. misera*, but having a dense indument on the ovary. F.M. Neg. 16541.

Loreto: San Isidro, *Tessmann 4969*, type. Soledad, Río Itaya, 110 meters, *Killip & Smith 29775*. Mishuyacu, 100 meters, *Killip & Smith 29989*. La Victoria, *Williams 2737*. Puerto Arturo, *Williams 5252*. "Mashu sisa."

Passiflora ligularis Juss. Ann. Mus. Hist. Nat. Paris 6: 113. *pl. 40*. 1805.

Plant glabrous throughout; stipules ovate-lanceolate or oblong-lanceolate, up to 2.5 cm. long; petioles up to 10 cm. long, bearing 4–6 scattered, liguliform or filiform glands 3–10 mm. long; blades broadly ovate, 8–15 cm. long, 6–13 cm. wide, abruptly acuminate, deeply cordate, entire; bracts ovate-lanceolate, connate toward the base; flowers 6–9 cm. wide; sepals ovate-oblong, white within; petals oblong, white or pinkish white; corona 5–7-ranked, the 2 outer rows of filaments equaling the petals, radiate, blue at the apex, banded with white and reddish purple; fruit ovoid, 6–8 cm. long, 4–5 cm. in diameter, the pericarp parchment-like, the pulp white, edible; seeds narrowly obcordate, reticulate.

Lima: Lima, cultivated, *Killip & Smith 21529; Rose 18776*.—Huánuco: Huánuco, *Ruiz & Pavón*. Cuchero, *Poeppig 1695*.—Junín: Huacapistana, 1,800 meters, *Killip & Smith 24330*. Tarma, cultivated, *Killip & Smith 21947*.—Ayacucho: Aina, 800 meters, *Killip & Smith 22681*.—Cuzco: Torontoy, Urubamba Valley, 2,400 meters, *Cook & Gilbert 814*.—Department uncertain: Carabaya, *Weddell 4777*.—Without locality: *Dombey 739*, type; *Pavón*. The common "granadilla" of western South America, extending to central Mexico. Its pulp is used for ices and cooling drinks.

Passiflora Lobbii Mast. in Mart. Fl. Bras. 13, pt. 1: 553. 1872. *P. obtusiloba* var. *glandulifera* Harms, Repert. Sp. Nov. 19: 25. 1923.

Stem finely pilosulous or glabrous; stipules linear-setaceous; petioles biglandular near the base, the glands minute, sessile; blades 2–3 cm. long, 4.5–8 cm. wide, 3-lobed one-third to one-half their length (lobes lance-ovate, obtuse, subequal), shallowly cordate, entire, coriaceous, glabrescent; bracts setaceous; flowers 1.5–2 cm. wide; sepals oblong-lanceolate, purplish without, grass-green within; petals linear-oblong, grass-green; corona 3-ranked, the outermost filaments filiform, purple and light green, the others pink or purple,

capitellate, the tip green; ovary glabrous; fruit globose, about 1.5 cm. in diameter; seeds closely reticulate.

Ancash: Between Samanco and Caraz, *Weberbauer 3165*, type of *P. obtusiloba* var. *glandulifera*.—Huánuco: Ambo, 2,400 meters, *2415*.—Ayacucho: Pampalca, 3,200 meters, *Killip & Smith 23241*. Huanta, 2,800 meters, *Killip & Smith 23322*.—Department uncertain: Caururu, *Savatier 1436*.—Without locality: *Lobb*, type; *Gay; MacLean; Mathews*. The type bears the inscription "Lobb, Columbia." It is certain that many Lobb specimens so labeled actually came from Peru, and presumably this one did.

Passiflora loretensis Killip, Journ. Wash. Acad. Sci. 21: 349. 1931.

Plant essentially glabrous; stipules semi-oblong, 1.3–1.8 cm. long; petioles up to 2 cm. long, bearing 2 pairs of subulate glands, one near the apex, the other near the middle; blades lanceolate, 10–12 cm. long, 5.5–6 cm. wide, acuminate, cordulate and subpeltate at the base, entire, coriaceous; bracts cordate-ovate, 2–2.5 cm. long; flowers about 5 cm. wide, pink(?); calyx tube broadly campanulate, the sepals and petals oblong, the sepals awned; corona filaments in 5 series, filiform, the 2 outer radiate, about 1.5 cm. long, pale pink; operculum fimbrillate to the middle; fruit globose, about 5 cm. in diameter; seeds coarsely reticulate.

Loreto: La Victoria, Amazon River, *Williams 3086*, type.

Passiflora macrochlamys Harms, Bot. Jahrb. 42: 130. 1908.

Plant glabrous nearly throughout; petioles 5-glandular; blades coriaceous or subcoriaceous, denticulate-serrate, 5–6 cm. long, 6–9 cm. wide, 3-lobed more than half their length, the middle lobe broadly ovate, 3–3.5 cm. wide at the base, abruptly acuminate, the lateral lobes widely divaricate; peduncles 3–5.5 cm. long; bracts connate two-thirds their length, about 5 cm. long; calyx tube cylindric, 6–6.5 cm. long, the sepals and petals oblong; corona minutely tuberculate.—F.M. Neg. 16544.

Huánuco: Monzón, 2,000–2,500 meters, *Weberbauer 3541*, type.—Without locality: *Ruiz & Pavón*.

Passiflora manicata (Juss.) Pers. Syn. Pl. 2: 221. 1806. *Tacsonia manicata* Juss. Ann. Mus. Hist. Nat. Paris 6: 393. *pl. 59, f. 2.* 1805.

Stem angulate; stipules semi-ovate, coarsely dentate; petioles 4–10-glandular; blades 4–8 cm. long, 5–9 cm. wide, rarely larger,

3-lobed to the middle, callous-serrulate or serrate, tomentose beneath, the lobes ovate or ovate-oblong; peduncles up to 8 cm. long; bracts free or united toward the base, ovate, 2–3 cm. long; calyx tube urceolate-campanulate, 1.5–2 cm. long, green without; sepals oblong-lanceolate, green, pink-tinged without, scarlet within; petals scarlet; corona in 3 or 4 series, the outer 2 or 3 filamentose, the filaments 2–4 mm. long, blue; ovary obovoid, glabrous; fruit ovoid or subspherical, 3.5–5 cm. long, glabrous and lustrous; seeds finely reticulate.

Cajamarca: Hacienda La Tajona, *Weberbauer 4051*. Western Venezuela and Colombia to Peru, sometimes cultivated.

Passiflora Matthewsii (Mast.) Killip, Journ. Wash. Acad. Sci. 17: 428. 1927. *Tacsonia Matthewsii* Mast. in Mart. Fl. Bras. 13, pt. 1: 539. 1872.

Stem tomentellous; stipules narrowly linear, 2.5–3 mm. long; petioles 6-glandular; blades 5–6 cm. along the midnerve, 3.5–4 cm. along the lateral nerves, 4–6 cm. between the apices of the lateral lobes, coriaceous, glabrous above, densely grayish-tomentose beneath, 3-lobed about to the middle, the lobes ovate-lanceolate or oblong-lanceolate, acute, serrulate; peduncles 1–2 cm. long, stout; bracts about 2.5 cm. long, connate to the middle; calyx tube cylindric, about 4 cm. long, tomentellous without; sepals and petals oblong, 2–2.5 cm. long, rose; corona minutely tuberculate.

Amazonas: Chachapoyas, *Mathews*, type.—Libertad: Near Cerro Uruchalda, 3,350 meters, *West 8175* (doubtfully referred here).

Passiflora menispermifolia HBK. Nov. Gen. & Sp. 2: 137. 1817. *P. villosa* Dombey ex Tr. & Planch. Ann. Sci. Nat. sér. 5. 17: 154. 1873, as synonym.

Plant densely hispid-hirsute with light brown hairs nearly throughout; stipules subreniform, glandular-denticulate or subentire; petioles 2–4-glandular; blades broadly lanceolate or suborbicular in general outline, 10–16 cm. long, 8–13 cm. wide, angulately 3-lobed, cordate, remotely glandular-denticulate to dentate, the lobes acute or rounded, the middle one broadly ovate-deltoid; bracts narrowly lanceolate or elliptic-lanceolate, 1–2 cm. long, acuminate, glandular-denticulate; flowers up to 6 cm. wide, violet; sepals lance-oblong; petals linear-oblong; corona filaments in several series, the outermost filiform, about 2 cm. long, the others very dense, shorter; operculum filamentose in the upper half; ovary ovoid, glabrous; seeds coarsely reticulate.

Cajamarca: Between Tomependa and Jaén de Bracamoras, *Humboldt & Bonpland*, type.—Loreto: Yurimaguas, 135 meters, *Killip & Smith 28705*. Canchahuaya, Río Ucayali, *Huber 1408*. Mishuyacu, 100 meters, *Klug 1064*. Balsapuerto, 220 meters, *Klug 3091*.—Huánuco: Chinchao, *Ruiz & Pavón*.—Ayacucho: Aina, 900 meters, *Killip & Smith 22795*.—Cuzco: Urubamba Valley, 1,800 meters, *Cook & Gilbert 1085*.—Without locality: *Dombey*, type of *P. villosa* Dombey; *Mathews 2074*. Nicaragua to Peru. Also in upper Amazonian Brazil.

Passiflora mesadenia Killip, Journ. Wash. Acad. Sci. 17: 427. 1927.

Stem subquadrangular, pilosulous; stipules subreniform, glandular-dentate; petioles conspicuously biglandular at the middle, sometimes with a third gland above or below this pair; blades 4–6 cm. long, 6–8 cm. wide, 3-lobed to the middle, subauricular or cordulate at the base, shallowly and irregularly dentate-serrate, glabrous above, pubescent beneath; peduncles 4–5.5 cm. long, stout; bracts 4–5 cm. long, united about half their length, glabrous; calyx tube cylindric, 7–8 cm. long, pink, glabrous; sepals oblong, pink without, white within; petals oblong-spatulate, white; corona minutely tuberculate; ovary glabrous, pruinose.

Huánuco: Vilcabamba, Río Chinchao, 1,800 meters, *4960*, type. Pampayacu, *Kanehira 265a; Sawada P-1*.

Passiflora mixta L. f. Suppl. 408. 1781. *P. longiflora* Lam. Encycl. 3: 39. 1789. *P. Tacso* Cav. Diss. 10: 451. *pl. 277*. 1790. *Tacsonia mixta* Juss. Ann. Mus. Hist. Nat. Paris 6: 394. 1805. *T. mixta* var. *longiflora* DC. Prodr. 3: 335. 1828.

Plant glabrous throughout or more usually pubescent on the under side of the leaves, the involucre, the calyx tube, and the ovary; stem angulate; stipules subreniform, callous-dentate or -serrate; petioles minutely 4–8-glandular; blades 5–10 cm. long, 6–17 cm. wide, 3-lobed to or to slightly below the middle, the lobes ovate-oblong, acute or abruptly acuminate, coarsely or finely callous-serrate; peduncles stout, up to 6 cm. long; bracts united one-half to three-quarters their length into a tubulate-campanulate or nearly cylindric involucre 2–5 cm. long; calyx tube cylindric, 8–11 cm. long, about 1 cm. in diameter, yellow-green to orange-red without, cream-color within; sepals oblong, 3–4 cm. long; petals pink to orange-red; corona short-tuberculate, deep lavender or purple; fruit ovoid, 4.5–6 cm. long, 2–2.5 cm. in diameter; seeds reticulate.

Huánuco: Mito, 2,700 meters, *1615*. Muña, 2,400 meters, *4315*. Pillao, *Ruiz & Pavón*.—Cuzco: Lucumayo Valley, *Cook & Gilbert 1348*. Panticalla Pass, 3,600 meters, *Cook & Gilbert 1824*. Urubamba Valley, 2,400 meters, *Cook & Gilbert 828*. Paucartambo, 3,000 meters, *Herrera 2999*.—Ayacucho; Tambo, *Weberbauer 5621*.—Puno: Sandía, *Weberbauer 872*.—Without locality: *Jussieu*, type of *P. longiflora* and of *P. Tacso; Dombey 746; Née; Haenke 1957, 2040*. Venezuela and Colombia to Peru and Bolivia, between 2,500 and 3,600 meters. Often cultivated. Fruit edible. "Tacso," "tumbo," "monte-turubo"; "xamppajrrai" (Quechua).

Passiflora mollissima (HBK.) Bailey, Rhodora 18: 156. 1916. *P. tomentosa* Lam. Encycl. 3: 40. 1789(?). *Tacsonia mollissima* HBK. Nov. Gen. & Sp. 2: 144. 1817. *Passiflora tomentosa* var. *mollissima* Tr. & Planch. Ann. Sci. Nat. sér. 5. 17: 131. 1873.

Stem terete, densely and softly yellow-villous; stipules subreniform, 7–9 mm. long; petioles bearing 8–12 sessile glands; blades 5–10 cm. long, 6–12 cm. wide, 3-lobed about two-thirds their length (lobes ovate or ovate-oblong, acute, the sinuses acute), sharply serrate-dentate, softly pubescent above, grayish- or yellowish-tomentose beneath; peduncles 2–6 cm. long; bracts 2.5–3 cm. long, united one-third to one-half their length; calyx tube 6.5–8 cm. long, olive-green, often red-tinged without, white within, glabrous; sepals oblong, 2.5–3.5 cm. long; petals pink; corona reduced to a purple band with a few tubercles or crenulations; ovary sericeo-tomentose; fruit oblong-ovoid, 6–7 cm. long, 3–3.5 cm. in diameter, yellowish, softly pubescent; seeds reticulate.—F.M. Neg. 16548.

Huánuco: Huánuco, 3,200 meters, *2074*. Pampayacu, *Kanehira 265*.—Junín: Tarma, 3,000–3,200 meters, *Killip & Smith 21868, 21942*. Ocopa, 3,300 meters, *Killip & Smith 22011*. Carpapata, 3,200 meters, *Killip & Smith 24481*. Huancayo, *Valleriesta*.—Ayacucho: Ccarrapa, 1,200 meters, *Killip & Smith 23236*.—Cuzco: Ollantaitambo, 3,000 meters, *Cook & Gilbert 270*. Guispicanchi, *Herrera 696*. Pauccarccoto, 2,700 meters, *Bues* (*Herrera 2127, 2128*). Cuzco, *Herrera 2943; Popenoe 1355*.—Arequipa: Arequipa, cultivated, *Rose 18979*. Venezuela and Colombia to Peru and Bolivia, usually found between 2,000 and 3,000 meters; often cultivated. Fruit edible. "Tacso," "tintin," "tumbo," "tumbo del monte," "trompos."

Passiflora morifolia Mast. in Mart. Fl. Bras. 13, pt. 1: 555. 1872.

Stem sparingly hispidulous above; stipules semi-ovate, about 6 mm. long and 3 mm. wide, long-acuminate; petioles biglandular near the apex, the glands thick-stipitate; blades 4–11 cm. long, 5–15 cm.

wide, 3-lobed to below the middle (lobes acute, the middle one ovate or ovate-lanceolate, usually narrowed at the base, the lateral ones divergent), deeply cordate, repandly dentate or denticulate, or subentire, membranous, minutely hispidulous above, minutely pilosulous beneath; peduncles solitary or in pairs, widely divaricate; bracts setaceous; flowers 2–3 cm. wide; sepals linear-oblong, white, red-mottled within; petals linear-lanceolate; corona filaments in a single series, filiform, 5–6 mm. long, white, banded with blue or violet; operculum plicate; ovary densely pilose; fruit globose, 2 cm. in diameter; seeds very slightly compressed, coarsely reticulate.

Cuzco: Urubamba Valley, near Echarate, *Weberbauer 7949.*—Without locality: *Gay 941; Pavón.* Common in Argentina; rare in Bolivia, Guatemala, and Mexico.

Passiflora nephrodes Mast. Bull. Torrey Club 17: 282. 1890.

Plant densely hirsute throughout; stipules subreniform, 1.5–2 cm. long, coarsely serrate-dentate; petioles 2- or 3-glandular near the middle; blades 6–18 cm. long, 5–9 cm. wide, 3-lobed, subcordate, denticulate, the middle lobe ovate or ovate-lanceolate, much longer than the deltoid-ovate lateral lobes; bracts ovate-lanceolate, 1–2 cm. long, serrate; flowers 6–8 cm. wide; sepals oblong, dorsally awned; petals linear-oblong; corona filaments filiform, in several series, the outermost radiate, 2.5–3 cm. long, purple in the lower half, white in the upper, the succeeding filaments erect, 3–6 mm. long; operculum filamentose in the upper half; fruit ovoid, about 4 cm. long; seeds reticulate.

Junín: Yapas, Pichis Trail, 1,600 meters, *Killip & Smith 25447.*—Cuzco: Lares Valley, *Weberbauer 7920.* Also in western Bolivia and Amazonian Brazil.

Passiflora nitida HBK. Nov. Gen. & Sp. 2: 130. 1817.

Plant glabrous throughout; stipules linear-subulate; petioles biglandular at the apex; blades ovate-oblong, ovate-elliptic, or broadly ovate, 9–17 cm. long, 6–10 cm. wide, acute or acuminate, subentire, undulate-denticulate, or serrulate, usually becoming blackish in drying; bracts oblong-ovate, about 3.5 cm. wide; flowers 9–11 cm. wide; calyx tube campanulate; sepals oblong-lanceolate, white within; petals narrowly oblong, white; corona filaments in several series, the 2 outer subequal, 2–3.5 cm. long, white and pink-spotted at the base, banded with blue and white at the middle, white at the apex, the inner filaments shorter; operculum fimbrillate; fruit globose, 3–4 cm. in diameter; seeds reticulate.

Loreto: Iquitos, 100 meters, *Killip & Smith 26909, 27158; Klug 256, 828; Williams 1383, 1517; Tessmann 3703; Mexia 6488.* Río Nanay, *Williams 1130.* La Victoria, *Williams 2800.* Río Rumiyacu, *Raimondi 614.* Gamitanacocha, Río Mazán, 100–125 meters, *J. M. Schunke 51.* Colombia to the Guianas, south to Peru and central Brazil. "Granadilla," "puru puru."

Passiflora obtusiloba Mast. in Mart. Fl. Bras. 13, pt. 1: 554. 1872. *P. Niorbo* Planch. Ann. Sci. Nat. sér. 5. 17: 156, footnote. 1873.

Stem finely pilosulous or glabrescent below, densely pubescent toward the end; stipules setaceous; petioles glandless; blades coriaceous, glabrous or nearly so, 1–2.5 cm. long, 2–5 cm. wide, 3-lobed about a third their length, the lobes subequal, rounded; peduncles in pairs; bracts setaceous; flowers 1.5–2 cm. wide; sepals narrowly oblong, yellowish green; petals linear-spatulate, light green; corona 2-ranked, the outer filaments terete, about 4 mm. long, yellow-green, the inner filiform, 1.5–2 mm. long; operculum closely plicate; ovary glabrous.

Junín: Tarma, 2,800–3,100 meters, *Weberbauer 1735; Killip & Smith 21943.* Palca, *Stevens 40.* Huasahuasi, *Dombey 735* (type of *P. Niorbo*).—Ayacucho: Quinua, *Weberbauer 5545.*—Without locality: *Pavón* (type); *Gay.* "Niorbo."

Passiflora parvifolia (DC.) Harms in Weberbauer, Pflanzenw. Per. And. 253. 1911. *Tacsonia parvifolia* DC. Prodr. 3: 335. 1828. *Passiflora brachychlamys* Harms, Notizbl. Bot. Gart. Berlin 10: 815. 1929.

Plant essentially glabrous throughout; stipules semi-ovate, 6–10 cm. long, coarsely and remotely serrate; petioles minutely 3–7-glandular; blades small for the subgenus *Tacsonia*, 2–3 cm. long, 3–6 cm. between the apices of the lateral lobes, 3-lobed to below the middle, the lobes ovate to ovate-lanceolate, 7–15 mm. wide, sharply serrulate; peduncles 3–6 cm. long, very slender; bracts 2.5–3 cm. long, connate at least to the middle, the tube subconical, the free portions ovate-lanceolate, acute; calyx tube cylindric, 6–9 cm. long, rose-green or rose-red; sepals and petals oblong, 2–2.5 cm. long, bright red; corona minutely tuberculate; ovary narrowly ellipsoidal.—F.M. Neg. 24153.

Libertad: Eastern base of Cerro Huaylillas, 3,900 meters, *West 8126.*—Huánuco: Huánuco, 3,500–4,000 meters, *2198; Weberbauer 3329.* Tambo de Vaca, 4,300 meters, *4405.* Mito, *1823.* Muña, *Pearce* in 1863. Yanano, 1,800 meters, *5743.*—Ayacucho: Tambo,

Pearce 309.—Cuzco: Province of Paucartambo, 3,350 meters, *Herrera 484*, type of *P. brachychlamys*. Hacienda Ccapana, *Herrera 588.*—Without locality: *Ruiz & Pavón 533*, type; *Lobb* (erroneously cited in Mart. Fl. Bras. as from Colombia). Endemic, Pearce's 35, from Ecuador, also cited as this, being *P. cumbalensis*. "Samppajhuai" (Cuzco), "jamppajhuai."

Passiflora peduncularis Cav. Icon. 5: 15. *pl. 426*. 1799. *Tacsonia peduncularis* Juss. Ann. Mus. Hist. Nat. Paris 6: 395. 1805. *T. peduncularis* var. *Dombeyana* DC. Prodr. 3: 334. 1828. *T. Dombeyana* M. Roemer, Fam. Nat. Syn. 2: 197. 1846.

Stem quadrangular, tomentulous; stipules semi-ovate, coarsely and irregularly serrate; petioles 3–4-glandular; blades deeply cordate, serrulate, subcoriaceous, glabrous above, tomentulous on the nerves and veins beneath, 3-lobed to below the middle, the lobes ovate, subequal, 3–6 cm. long, the lateral widely divergent; peduncles 10–15 cm. long, stout; bracts 2–3 cm. long, united to above the middle; flowers white; calyx tube short-cylindric, 1.5–2 cm. long; sepals and petals oblong, 3–4 cm. long; corona in several series, the outermost consisting of very short, liguliform filaments, the others mostly of minute, filiform threads; ovary yellowish-tomentose; fruit spherical, 3–4 cm. in diameter.

Ancash: Ocros, Cajatambo, *Weberbauer 2675.*—Lima: Río Chillón, above Obrajillo, 3,000 meters, *Pennell 14393.*—Moquehua: Carumas, 3,300 meters, *Weberbauer 7345.*—Without locality: *Née*, type; *Pavón; Dombey*, type of *T. peduncularis* var. *Dombeyana; Wilkes Expedition; Mathews 480; Haenke 2118*. Probably restricted to the higher mountains of western Peru, reports of its occurrence in Chile and Ecuador doubtless being erroneous.

Passiflora pinnatistipula Cav. Icon. 5: 16. *pl. 428*. 1799. *Tacsonia pinnatistipula* Juss. Ann. Mus. Hist. Nat. Paris 6: 393. 1805. *T. micradena* DC. Prodr. 3: 334. 1828.

A rather stout vine with very showy flowers, the younger portions of the stem white-tomentose or white-lanate; stipules purplish, 5–7 mm. long, 4–5 mm. wide, pinnatisect or palmately cleft into filiform divisions; petioles minutely 4–6-glandular; blades coriaceous, rugose and glabrous above, densely white- or grayish-lanate beneath, 5–10 cm. long, 6–13 cm. wide, 3-lobed about four-fifths their length, the lobes lanceolate or oblong-lanceolate, acuminate, sharply serrate; peduncles up to 7 cm. long, the bracts free, ovate, 1–1.5 cm. long, remotely sharp-serrate, usually reddish purple without; calyx tube

cylindric, 4.5–5 cm. long, bright pink and usually cano-tomentose without, white within, blue-tinged toward the throat; sepals oblong, 3–4 cm. long, greenish or pinkish without, white within; petals white, faintly blue-tinged; corona 2-ranked, the outer rank filamentose, 1.5–2 cm. long, blue and white, the inner a ring of minute, deep purple tubercles; ovary white-tomentose; fruit subglobose, about 5 cm. in diameter; seeds reticulate.

Junín: Tarma, 3,100 meters, *Ruiz & Pavón*, type of *Tacsonia micradena; Killip & Smith 21938*. Between Tarma and Palca, *Weberbauer 1733*. Ocopa, 3,300 meters, *Killip & Smith 22012*. Huancayo, 3,600 meters, *Killip & Smith 22034; Ledig 5*.—Cuzco: Sacsaihuamán, *Herrera 295*. Paucartambo, 3,350 meters, *Herrera 486*. Guispicanchi, 3,400 meters, *Herrera 2586, 2605*. Ollantaitambo, 3,000 meters, *Cook & Gilbert 475*. Tinta, *Cook & Gilbert 228*. Probably a native of Peru or Chile but cultivated throughout the Andes for its edible fruit or as an ornamental. "Tin-tin," "puru-puru," "tacso."

Passiflora Poeppigii Mast. Trans. Linn. Soc. 27: 630. 1871; in Mart. Fl. Bras. 13, pt. 1: 546. 1872. *P. lunata* Juss. sensu Poepp. & Endl. Nov. Gen. & Sp. 2: 58. *pl. 178*. 1838 (not *P. lunata* Juss.).

Plant glabrous throughout; stipules subulate-falcate; petioles slender, glandless; blades transversely oblong in general outline, 1.5–5 cm. along the midnerve, 2–6.5 cm. along the lateral nerves, 3.5–10 cm. wide, repand-truncate at the upper margin, membranous; peduncles 4–6 cm. long, very slender; bracts setaceous; flowers 1.5–2 cm. wide, white; sepals broadly ovate; petals none(?); corona 2-ranked, the outer filaments filiform, 7–8 mm. long, the inner narrowly linear, much shorter; operculum plicate; ovary ovoid.

Loreto: Yurimaguas, *Poeppig D.2170*, type.

If this species is truly apetalous, as described by the authors, it is the only South American representative of its subgenus without petals. Authors have frequently overlooked very small petals and this may be the case here. It is impossible to decide the point because of the condition of the flowers of the type specimen.

Passiflora punctata L. Sp. Pl. 957. 1753.

Plant glabrous throughout; stipules linear-falcate; petioles glandless; blades transversely oblong in general outline, 2–5 cm. along the midnerve, 3–7 cm. along lateral nerves, 6–12 cm. wide, truncate and very shallowly 3-lobed at the apex or rather conspicuously bilobed, thin-membranous, glaucescent beneath; peduncles 5–8 cm.

long, very slender; bracts setaceous; flowers 2.5–4 cm. wide; sepals oblong-lanceolate, light yellow-green; petals similar, greenish white; corona 2-ranked, the outer filaments liguliform, falcate, dilated near the middle, yellow-green at the apex, purple to magenta at the center, white at the base, the inner filaments filiform, capitellate; operculum plicate; fruit ellipsoidal; seeds transversely 6-sulcate.

Tumbez: Hacienda Chicama, 900 meters, *Weberbauer 7637.*—San Martín: Tarapoto, 750 meters, *Williams 5922.*—Libertad: Chinchín, *Née.*—Lima: Lima Botanical Garden, *Killip & Smith 21527; Née.* Barrana, *Wawra 527.*—Cuzco: Santa Ana Valley, *Herrera 941.*—Without locality: *Dombey 736; Pavón.* Probably native in Ecuador and northern Peru, this species is frequently cultivated in western South America. "Norbo."

Passiflora pyrrhantha Harms, Notizbl. Bot. Gart. Berlin 9: 977. 1926.

Scandent shrub with a few tendrils, the branchlets puberulent; leaves ovate or ovate-oblong, 10–16 cm. long, 6–10 cm. wide, acuminulate, remotely denticulate in the upper half, subcoriaceous, glabrous; flowers fire-red, in racemes at the end of long peduncles which occasionally terminate in a tendril; calyx tube cylindric, about 5 cm. long, appressed-puberulent; sepals and petals narrowly oblong; corona filaments in 2 series, the outer about 6 mm. long, slightly falcate-dilated, the inner subulate, very short; operculum filamentose nearly to the base; ovary ovoid, velutinous.—F.M. Neg. 16555.

Loreto: Puerto Melendez, Pongo de Manseriche, *Tessmann 4770,* type. Gamitanacocha, Río Mazán, 100–125 meters, *J. M. Schunke 358.*

Passiflora quadrangularis L. Syst. Nat. ed. 10. 2: 1248. 1759. *P. macrocarpa* Mast. Gard. Chron. 1869: 1012. 1869.

Plant glabrous throughout; stem stout, quadrangular, the angles winged; stipules ovate or ovate-lanceolate, 2–3.5 cm. long; petioles 6-glandular, the glands subsessile; blades broadly ovate or ovate-oblong, 10–20 cm. long, 8–15 cm. wide, abruptly acuminate, entire, penninerved, the principal lateral nerves 10–12 to a side, approximate; bracts cordate-ovate, 3–5.5 cm. long; flowers up to 12 cm. wide; sepals ovate or ovate-oblong, white, violet, or pinkish within; petals slightly narrower than the sepals, white, deeply pink-tinged; corona 5-ranked, the 2 outer ranks subequal, the filaments up to 6 cm. long, radiate, multicolored, the other ranks of the corona much shorter, mostly purple and white; fruit oblong-ovoid, 20–30 cm. long, 12–15

cm. in diameter, terete or longitudinally 3-grooved; seeds obcordate or suborbicular, up to 1 cm. long.

San Martín: San Roque, 1,400 meters, *Williams 7250.*—Loreto: Iquitos, 100 meters, *Killip & Smith 27152; Klug 733.* Río Itaya, *Williams 188.*—Huánuco: Ambo, 2,600 meters, *2422.* Chinchao, *Ruiz & Pavón.* Extensively cultivated in tropical America. The pulp is eaten, and the thick rind is often made into sweetmeats or preserves. "Granadilla," "tumbo," "tambo."

Passiflora quadriflora Killip, Journ. Wash. Acad. Sci. 17: 424. 1927.

Plant glabrous throughout; stipules setaceous; petioles glandless; blades narrowly lanceolate, 5–8 cm. long, 1.5–2 cm. wide, unlobed, entire, acute, coriaceous or subcoriaceous; peduncles in pairs, 2-flowered, the main portion and the branches nearly equal; bracts setaceous; flowers about 5 cm. wide, greenish white; sepals lanceolate; petals linear-lanceolate, about a third as long as the sepals; corona 2-ranked, the outer filaments filiform, subequal to the petals, the inner capillary, much shorter; operculum slightly plicate, finely fimbriate; fruit globose-ovoid, subtrigonous, about 2.2 cm. in diameter.

San Martín: Tarapoto, 1,200 meters, *Ule 6464; Williams 5514.* —Huánuco: Río Chinchao, 1,900 meters, *5189,* type.

Passiflora quadriglandulosa Rodschied, Med. & Chir. Bemerk. Esseq. 77. 1796. *Tacsonia quadriglandulosa* DC. Prodr. 3: 335. 1828.

Stem terete, glabrous or the younger parts pilosulous; stipules setaceous, soon deciduous; petioles obscurely biglandular at the base; blades polymorphic, unlobed and oblong or oblong-lanceolate, 8–15 cm. long, 3–8 cm. wide, or asymmetrically 2- or 3-lobed (lobes acuminate, the middle one longer than the lateral ones), irregularly repand-dentate, glabrous, or finely puberulent on the nerves above, finely puberulent or tomentellous beneath; bracts narrowly linear to narrowly oblong-lanceolate, 8–15 mm. long, 1–5 mm. wide, glandular-serrulate, or (in var. *involucrata* (Mast.) Killip) broadly ovate, up to 5 cm. long and 3 cm. wide, doubly serrate; flowers pink, red, or scarlet; calyx tube cylindric, 1–1.5 cm. long; sepals and petals similar and subequal, 6–8 cm. long; corona 3-ranked, the 2 outer ranks filamentose to the base, the filaments bright red or scarlet, the third coronal rank tubular, filamentose in upper third only; ovary ferruginous-tomentulous; fruit ovoid, about 3.5 cm. long; seeds reticulate.

Loreto: *Fox 89*. Río Itaya, 110 meters, *Killip & Smith 29408; Klug 1069, 1226*. Mishuyacu, 100 meters, *Killip & Smith 29974*. Lower Río Nanay, *Williams 562*. La Victoria, *Williams 3118*. Caballo-Cocha, *Williams 2458*. Iquitos, *Williams 8052*. Rancho Indiana, Río Marañón, 110 meters, *Mexia 6405*. Gamitanacocha, Río Mazán, 100–125 meters, *J. M. Schunke 47, 52*. Chasuta, *Raimondi 581*. Peras, *Fox 119*. Río Ucayali, *Tessmann 3309*. Guianas to Peru, Bolivia, and northern Brazil. "Granadilla acida." The variety is represented in Peru by the following collections, all from Loreto: Mishuyacu, *Klug 342, 417*. Río Nanay, *Williams 780, 1104*. Iquitos, *Ducke 21230*. "Estrella," "granadilla."

Passiflora riparia Mart. ex Mast. in Mart. Fl. Bras. 13, pt. 1: 599. *pl. 116*. 1872.

Plant glabrous except the ovary; stipules linear, soon deciduous; petioles biglandular at the middle; blades oblong or oblanceolate, 10–15 cm. long, 4.5–8 cm. wide, abruptly acuminate, entire or minutely serrulate, subcoriaceous; peduncles 4–5 cm. long, borne on short, axillary, leafless (or with much reduced leaves) branches; bracts ovate-oblong, 3–4 cm. long, reddish; calyx tube cylindric-campanulate, about 1 cm. long; sepals oblong, 4–5 cm. long, white, green-tinged; petals oblong-linear, white; corona in several series, the filaments of the outer series subequal, 4–5 cm. long, banded with blue or violet and white, those of the innermost series about 2 mm. long, the intervening ones an irregular mass of tubercles; operculum crenulate; ovary rufo-sericeo-tomentose; fruit ovoid or globose, 3–4 cm. long, apparently not edible; seeds reticulate at the center, striate at the margin.

San Martín: Tarapoto, *Williams 5637, 5848*. Alto Río Huallaga, *Williams 6300*. Lamas, 840 meters, *Williams 6378*. Juanjuí, 400 meters, *Klug 3897*. Chasuta, 260 meters, *Klug 4037*.—Loreto: Yurimaguas, 135 meters, *Killip & Smith 28214, 28940; Williams 7876*. Lower Río Huallaga, 135 meters, *Killip & Smith 29012*. Iquitos, 100 meters, *Williams 1392, 1440, 7996*. La Victoria, Río Amazonas, *Williams 3126*.—Junín: Puerto Bermúdez, 375 meters, *Killip & Smith 26683;* Puerto Yessup, 400 meters, *Killip & Smith 26307*. Also in Amazonian Brazil and southernmost British Guiana. "Purupuru," "chinchorcon," "granadilla."

Passiflora rosea (Karst.) Killip, Field Mus. Bot. 19: 278. 1938 (*P. pinnatistipula* × *P. mollissima*). *Poggendorffia rosea* Karst.

Linnaea 28: 438. 1856; Fl. Columb. 1: *pl. 15.* 1858. *Tacsonia rosea* Sodiro, Anal. Univ. Quito 18: 343. 1903.

Plant tomentose; stipules linear-lanceolate, laciniate-dentate above the middle; petioles 6–8-glandular; blades 3-lobed to slightly below the middle, sharply serrate, the lobes ovate or ovate-oblong; bracts cordate-ovate, free to the base; calyx tube 4.5–5 cm. long, enlarged near the middle; sepals and petals oblong-lanceolate, 2.5–3 cm. long, bright pink; corona filamentose, in 2 series; gynophore 3–4.5 cm. long, the filaments of the stamens arising below its middle, the anthers basifixed; ovary densely white-sericeo-tomentose; fruit ovoid, about 8 cm. long; seeds broadly obovate, closely reticulate.

Junín: Tarma, 3,100 meters, *Killip & Smith 21885.* Huancayo, *Chavez 129*—Cuzco: Paucartambo, 3,000 meters, *Herrera 2999a.* Also in Colombia and Ecuador.

This curious plant is the basis of the monotypic genus *Poggendorffia.* There are, however, good reasons for believing it a natural hybrid between *P. pinnatistipula* and *P. mollissima.* In the vegetative parts it rather closely resembles *P. mollissima,* whereas in the length and indument of the calyx tube and the filamentose outer series of corona filaments it is suggestive of *P. pinnatistipula.* "Purupuru."

Passiflora rubra L. Sp. Pl. 956. 1753.

Stem densely grayish pubescent; stipules setaceous; petioles glandless; blades membranous, finely pubescent or rarely softly hirsute, 2–8 cm. along the midnerve, 4–11 cm. along the lateral nerves, 3–10 cm. wide, bilobed, the lobes widely divergent, or shallowly and subequally 3-lobed; peduncles solitary; bracts none; flowers up to 5 cm. wide; sepals linear-lanceolate, reddish or greenish without, white within; petals half as long as the sepals, white; corona prevailingly 1-ranked, the filaments narrowly liguliform or nearly filiform, purplish at the base, green or white above; operculum slightly plicate; ovary subglobose, densely hirsute with white or brownish hairs; fruit ovoid or obovoid, 2–2.5 cm. long, 1.5–1.8 cm. wide, rarely larger, tapering at the base, 10-angled; seeds black, transversely sulcate, the ridges smooth.

Tumbez: Hacienda Chicama, 900–1,000 meters, *Weberbauer 7653.* —San Martín: San Roque, 1,350–1,500 meters, *Williams 7088.* Tarapoto, *Ule 6546.*—Huánuco: Muña, 2,100 meters, *4162.*—Junín: La Merced, 700 meters, *Killip & Smith 23400, 23432, 25371.* Yapas, Pichis Trail, 1,500 meters, *Killip & Smith 25441.*—Ayacucho: Aina, 800 meters, *Killip & Smith 22800.*—Cuzco: Uchumayo, *Bues*

(*Herrera 2129*). Echarate, 900 meters, *Bues* in 1928.—Without locality: *Ruiz & Pavón*. "Mazo-manchachi" (Cuzco). Common in the West Indies, and from Colombia to Peru; rarer elsewhere in South America.

Passiflora serrato-digitata L. Sp. Pl. 960. 1753. *P. serrata* L. Syst. Nat. ed. 10. 2: 1248. 1759. *P. digitata* L. Sp. Pl. ed. 2. 1360. 1763. *P. serrata* var. *digitata* R. & P. ex DC. Prodr. 3: 330. 1828. *P. digitata* R. & P. ex M. Roemer, Fam. Nat. Syn. 2: 183. 1846.

Plant essentially glabrous throughout; stipules linear-subulate, about 1.5 cm. long; petioles biglandular at the apex and at the middle, the glands up to 3 mm. long; blades up to 15 cm. long and 18 cm. wide, palmately 5–7-lobed to below the middle, the lobes oblong to oblanceolate, acuminate, finely serrulate; bracts ovate-lanceolate, 3–5 cm. long, united a quarter their length, slightly pubescent; flowers 6–8 cm. wide; sepals and petals oblong, blue-tinged to pinkish blue; corona in several series, the 2 outer filamentose, radiate, banded with blue, white, and purple; fruit globose, 4–5 cm. in diameter, the pericarp brittle, the pulp edible; seeds reticulate.

San Martín: Juanjuí, 800 meters, *Klug 4278*.—Loreto: Iquitos, 100 meters, *Killip & Smith 27233, 27422; Williams 3751*. Yurimaguas, 135 meters, *Killip & Smith 27849*. Lower Río Huallaga, 155–210 meters, *Williams 5153*. Río Ucayali, *Tessmann 3373*. Pongo de Manseriche, *Tessmann 4955*.—Junín: La Merced, 700 meters, *Killip & Smith 23931, 24052*. Paucartambo Valley, 700 meters, *Killip & Smith 25422*.—Ayacucho: Aina, 900 meters, *Killip & Smith 22825*.—Cuzco: Chancamayo, Lares Valley, *Weberbauer 7939*.—Arequipa: Vito, *Ruiz & Pavón*.—Department uncertain: Hacienda Chalhuapuquio, *Stevens 154*. "Ccoto-gguantte," "ckoto huanthi." West Indies, Guianas, and Amazonian Brazil to southern Bolivia and Peru.

Passiflora skiantha Huber, Bol. Mus. Goeldi 4: 591. *f. 5*. 1906.

Scandent shrub, glabrous throughout; leaves elliptic, up to 17 cm. long and 10 cm. wide, abruptly acute or acuminate, membranous; flowers in short, dense fascicles; calyx tube cylindric, 3–3.5 cm. long; sepals and petals oblong, 2.5–3 cm. long; corona filaments in 4 series, the outermost spatulate, about 1.5 cm. long, the others much shorter; ovary ellipsoidal.

Loreto: Cerro de Canchahuaya, *Huber 1424*, type.

Passiflora spectabilis Killip, Journ. Wash. Acad. Sci. 20: 379. 1930.

Plant glabrous; stipules semi-ovate or semi-oblong, up to 6 cm. long; petioles 2–3-glandular, the glands sessile; blades 6–12 cm. long, 10–20 cm. wide, 3-lobed not more than to the middle, peltate near the lower margin, glaucescent, the lobes broadly triangular, obtuse or subacute; bracts ovate, 6–7 mm. long, borne 6–12 mm. from the base of the flower; flowers 5–7 cm. wide, pink or white; calyx tube campanulate; sepals oblong, short-awned; petals linear; corona filaments very slender, in 4 series, the 2 outer subequal to the petals, blue, white at the tips; operculum filamentose nearly to the base; fruit globose, 5 cm. in diameter, edible; seeds coarsely reticulate.

Loreto: Mishuyacu, 100 meters, *Killip & Smith 29884*, type; *Klug 242*. Iquitos, 100 meters, *Killip & Smith 27165, 29846*.—Junín: Eneñas, 1,600 meters, *Killip & Smith 25764*.

Passiflora spinosa (Poepp. & Endl.) Mast. Trans. Linn. Soc. 27: 630. 1871; in Mart. Fl. Bras. 13, pt. 1: 576. 1872. *Tacsonia spinosa* Poepp. & Endl. Nov. Gen. & Sp. 2: 59. *pl. 181*. 1838.

Woody vine, glabrous throughout except the ovary, the tendrils often reduced to stout spines; leaves oblong, 10–17 cm. long, 3–9 cm. wide, acuminate, entire, coriaceous, lustrous; flowers bright red, in slender racemes up to 25 cm. long, these sometimes bearing reduced leaves; calyx tube cylindric, 4–5 cm. long, glabrous; sepals and petals narrowly oblong; corona filaments in 2 series, yellow, the outer dolabriform, the inner filiform; operculum filamentose in the upper third; ovary narrowly oblong, puberulent.

Loreto: Yurimaguas, 135 meters, *Poeppig D. 2187*, type; *Killip & Smith 28147*. Caballo-Cocha, Río Amazonas, *Williams 2458*. Upper Río Nanay, *Williams 1134*. Also in Colombia and Amazonian Brazil.

Passiflora suberosa L. Sp. Pl. 958. 1753.

Plant glabrous to densely pubescent; stipules linear-subulate; petioles minutely biglandular above the middle, the glands normally stipitate; blades membranous or subcoriaceous, highly variable in outline, entire or usually (in Peruvian material) 3-lobed, the middle lobe the largest; bracts setaceous; flowers 8–13 mm. wide, solitary or in pairs; sepals ovate-lanceolate, greenish yellow; petals none; corona filaments in 2 series, filiform, the outer ones purple, white, and yellow, the inner green; operculum plicate; fruit globose or ovoid, 6–15 mm. in diameter, glabrous; seeds coarsely reticulate.

Tumbez: Hacienda Chicama, 900 meters, *Weberbauer 7638*.—Lima: Callao, *Sargent 36; Gaudichaud 154, 154bis*. Lima, *Ball* in

1882; *Killip & Smith 21524; Rose 18773; Ruiz & Pavón; Savatier 1438; Wawra 2651.* Lurín, *Pennell 12207.* Atocongo, *Pennell 14772.* Ancón, 120 meters, *Mexia 8101.* Chosica, 1,000 meters, *2855.* Miraflores, *Savatier 1439.*—Department uncertain: La Convención, *Bues* in 1928.—Without locality: *Dombey 734; Née; Gay.* Common throughout tropical America. "Noxbe cimarrón."

Passiflora subulata Mast. in Mart. Fl. Bras. 13, pt. 1: 567. 1872. *P. platyceras* Harms, Repert. Sp. Nov. 18: 298. 1922.

Plant glabrous; stipules semi-oblong-lanceolate, 2–3.5 cm. long; petioles biglandular at or above the middle; blades 4–7 cm. long, 5–8 cm. wide, 3-lobed to the middle, the lobes ovate or ovate-oblong, obtuse, ascending; bracts ovate or ovate-oblong, 1.5–2.5 cm. long, cordate, borne close to the flower base; flowers 6–8 cm. wide, white; sepals oblong-lanceolate, keeled, the keel terminating in a green, foliaceous awn 8–12 mm. long; petals lanceolate; corona filaments in 3 series, the outermost capillary, about 2 cm. long, the others 2–3 mm. long; operculum fimbrillate to the middle.

Junín: Huacapistana, 1,800–2,500 meters, *Weberbauer 2171,* type of *P. platyceras; Killip & Smith 24311, 24323.* Pariahuanca Valley, between Panti and Rocchac, 2,400 meters, *Weberbauer 6542.*—Without locality: *MacLean,* type.

Passiflora tarapotina Harms, Verh. Bot. Ver. Brandenb. 48: 185. 1907. *Tacsonia glauca* Poepp. ex Mast. in Mart. Fl. Bras. 13, pt. 1: 569. 1872, as synonym?

Plant glabrous throughout; stipules semi-ovate, up to 2.5 cm. long; petioles up to 4 cm. long, biglandular near the middle; blades 6–8 cm. long, 9–10 cm. wide, 3-lobed to below the middle, subpeltate, glaucous beneath; peduncles 10–16 cm. long, very slender; bracts narrowly oblong to ovate-oblong, 10–15 mm. long, serrulate; flowers blood-red; calyx tube cylindric, 2–2.5 cm. long; sepals and petals narrowly oblong, subequal to the tube, the sepals bearing a large, foliaceous awn; corona in 3 or 4 closely approximate ranks of filaments barely 1 mm. long; operculum filamentose half its length.—F.M. Neg. 16559.

San Martín: Tarapoto, about 750 meters, *Ule 6462,* type; *Spruce 3923; Williams 5418, 5555, 5709, 5776.*—Loreto: Juanjuí, Province of Mainas, *Poeppig* in 1830 (*"Tacsonia glauca?"*). Very similar in leaf shape to *P. aristulata* and *P. subulata* but readily distinguished by the flowers.

Passiflora tenella Killip, Journ. Wash. Acad. Sci. 20: 375. 1930.

A very slender vine, essentially glabrous throughout; stipules setaceous; petioles glandless; blades transversely oblong in general outline, 1.5–3 cm. long, 4–7 cm. wide, shallowly 3-lobed at the truncate apex (lobes obtuse or truncate; rarely the leaves distinctly 3-lobed about a third their length), thin-membranous, glaucous beneath; peduncles solitary, 2–3 cm. long, very slender; bracts setaceous; flowers about 1.5 cm. wide, greenish white; sepals and petals thin-transparent, the petals only 2–3 mm. long; corona filaments filiform, in 2 series, the outer equaling the sepals, the inner very short; operculum only slightly plicate; fruit ellipsoidal, about 3 cm. long and 8 mm. in diameter, 6-ribbed, stipitate; seeds transversely 4–5-sulcate.

Tumbez: Hacienda La Choza, 100–200 meters, *Weberbauer 7704*, type.—Lima: Lima Botanical Garden, said to have come from forests of eastern Peru, *Pennell 14801*. Ecuador.

Passiflora Tessmannii Harms, Notizbl. Bot. Gart. Berlin 9: 978. 1926.

Scandent shrub; leaves ovate, broadly oblong, or obovate, 5–9 cm. long, 2.5–6.5 cm. wide, acute or subacute, entire, membranous, minutely puberulous beneath; peduncles solitary or in pairs; calyx tube cylindric-campanulate, about 1 cm. long; flowers white; sepals narrowly oblong, 1.5 to 2 cm. long, the petals similar but shorter; corona filaments in 2 series, the outer ones falcate-dilated above the middle, attenuate at the tip, about 7 mm. long, yellow, the inner subulate, much shorter; operculum fimbrillate; ovary ovoid, velutinous.—F.M. Neg. 16560.

Loreto: Río Marañón, at mouth of Río Santiago, *Tessmann 4385*, type.

Passiflora tiliaefolia L. Sp. Pl. 956. 1753.

Plant glabrous throughout; stipules ovate-lanceolate or oblong-lanceolate, 1–2 cm. long, the upper ones rarely narrowly linear-lanceolate; petioles 2–4-glandular, the glands saucer-shaped, subsessile or short-stipitate; blades cordate-ovate, 10–25 cm. long, 8–18 cm. wide, abruptly acuminate, cordate, entire; bracts ovate, about 2 cm. long, connate part way; flowers about 8 cm. wide, the sepals and petals oblong; corona 5-ranked, the 2 outer rows of filaments radiate, about half as long as the petals, the 3 inner rows much shorter; fruit subglobose, about 5 cm. in diameter.

Peru: Without locality, *Pavón*.

This is a doubtful species, based originally upon a figure given by Feuillée (1714) of a plant growing at Lima. Specimens from the mountains of Colombia (between 1,500 and 2,500 meters) apparently represent this species.

Passiflora tricuspis Mast. in Mart. Fl. Bras. 13, pt. 1: 587. 1872.

Stem glabrous, the ridges strongly scabrellous; stipules setaceous; petioles finely pilosulous or nearly glabrous, glandless; blades variable but in Peruvian plants usually 3-lobed from a third to two-thirds their length (lobes lanceolate to linear-oblong, subequal or the middle one the longer, the lateral lobes ascending), 5–13 cm. along the midnerve, 4.5–11 cm. along the lateral nerves, 3–7 cm. wide, glabrous or minutely puberulent above, finely pilosulous beneath; bracts setaceous; flowers 3–4.5 cm. wide; sepals and petals oblong or lance-oblong, white; corona 2-ranked, the outer filaments narrowly liguliform, about 1.5 cm. long, the inner narrowly linear, 2–2.5 mm. long, capitate; operculum plicate; ovary glabrous; fruit globose, about 1.5 cm. in diameter; seeds transversely 7-sulcate.

Loreto: Río Ucayali, *Tessmanni 3194*.—Junín: La Merced, 600–700 meters, *5436; Killip & Smith 23474*. Bolivia to eastern Brazil and Paraguay.

Passiflora trifasciata Lemaire, Ill. Hort. 15: *pl. 544*. 1868.

Plant glabrous throughout; stipules subulate; petioles glandless; blades 5–10 cm. along midnerve, 4–10 cm. along lateral nerves, 4–10 cm. wide, 3-lobed about a third their length (lobes deltoid, acute or subobtuse, the lateral ascending), membranous, dark green, mottled with white or yellowish green along the nerves above, reddish or violet beneath; bracts setaceous; flowers 2.5–3.5 cm. wide; sepals oblong, light green; petals linear, light green; corona 2-ranked, the outer filaments terete, 8–10 mm. long, the inner linear-clavate, much shorter; operculum plicate; fruit globose, 1.5–2.5 cm. in diameter; seeds transversely 6-sulcate.

San Martín: Lamas, 840 meters, *Williams 6327*.—Loreto: Yurimaguas, 135 meters, *Killip & Smith 27819, 28069, 28297, 28318; Williams 5075, 5213*. Balsapuerto, 200 meters, *Killip & Smith 28412*. Frequently cultivated; probably endemic to northern Peru. "Millua caspi."

Passiflora trifoliata Cav. Icon. 5: 16. *pl. 427*. 1799. *Tacsonia trifoliata* Juss. Ann. Mus. Hist. Nat. Paris 6: 393. 1805. *T. trigona* DC. Prodr. 3: 334. 1828.

A rather stout vine, densely short-villous-hirsute throughout; stipules oblong or oblong-lanceolate, 1.5–3 cm. long, glandular-fimbriolate; leaves trifoliolate, the petioles obscurely glandular, the leaflets ovate-oblong or linear-oblong, 3–5 cm. long, 1.5–2.5 cm. wide, acute, sessile, entire or serrulate; peduncles up to 9 cm. long, very stout; bracts free to the base, ovate-oblong, 2–3.5 cm. long, closely fimbriate or laciniate-fimbriate; flowers pendent, the calyx tube cylindric, 3–4 cm. long, green, purple-tinged without; sepals ovate-oblong, 2–3 cm. long, deep pink, white toward the base; petals ovate-oblong; corona minutely tuberculate, 2-ranked; fruit ovoid, 4–6 cm. long, 2.5–3.5 cm. in diameter, longitudinally 3-grooved; seeds reticulate.

Ancash: Tallenga, *Weberbauer 2878a.* Province of Cajatambo, *Weberbauer 2654.*—Lima: "Lima," *Weberbauer 261.* Río Blanco, 3,200 meters, *Killip & Smith 21636.* Viso, 2,700 meters, *579.* Huaros, 3,500 meters, *Pennell 14723.* Río Rimac, *Forster* in 1905.—Huánuco: Huariaca, *Sawada P97.*—Junín: Tarma, *Mathews 674.* Huancayo, 4,000 meters, *Ledig 4.* Oroya, *Kalenborn 184.*—Cuzco: Paucartambo, *Herrera 485.*—Department uncertain: Guamantanga, *Née,* type; Cajavilca Valley, *Savatier 1631.*—Without locality: *Ruiz & Pavón* (type of *Tacsonia trigona*); *Lobb 20; Savatier 490; Gay 542; Dombey 744; Haenke 1847; Raimondi 8597; Wilkes Expedition.* "Naupa-mchu-jamppajhuai" (Inca).

Passiflora triloba R. & P. ex DC. Prodr. 3: 330. 1828. *P. colubrina* Poepp. & Endl. Nov. Gen. & Sp. 2: 58. 1838.

Plant essentially glabrous throughout; stipules ovate-lanceolate, 2–3 cm. long; petioles biglandular at the apex, the glands saucer-shaped; blades 10–15 cm. long, 10–18 cm. wide, cordate-ovate or usually 3-lobed to about the middle (lobes ovate or oblong-ovate, subequal, obtuse, minutely denticulate), deeply cordate, glaucescent beneath; bracts ovate, 4.5–7 cm. long, connate only at the base; flowers up to 10 cm. wide; sepals oblong-lanceolate, purple-spotted or purple-tinged, the petals longer than the sepals; corona 3-ranked, the 2 outer rows of filaments banded with purple and white below and with blue and white above.—F.M. Neg. 16562.

San Martín: Tarapoto, *Spruce 4052.*—Loreto: Yurimaguas, 135 meters, *Killip & Smith 27664, 27834, 28716; Williams 4980; Poeppig 2171,* type of *P. colubrina.* Río Ucayali, *Tessmann 3155.*—Junín: San Ramón, 1,000 meters, cultivated, *Killip & Smith 24092.* Also in Bolivia.

Passiflora trisecta Mast. in Mart. Fl. Bras. 13, pt. 1: 564. 1872. *P. thaumasiantha* Harms, Notizbl. Bot. Gart. Berlin 10: 813. 1929; Rev. Chil. Hist. Nat. 34. *f.* 47. 1930.

Plant ferruginous-villous or -tomentose; stipules ovate-lanceolate, 1–2.5 cm. long, laciniate-serrate, the serrations glandular; petioles 5–7-glandular, the glands filiform; blades trifoliolate, the leaflets oblong-lanceolate, 4–9 cm. long, 1.5–3 cm. wide, acuminate, petiolulate, serrate; peduncles stout, 8–15 cm. long; bracts ovate, 2.5–3.5 cm. long, free to base, deeply fimbriate-laciniate; flowers white; calyx tube tubular-campanulate, 1–1.5 cm. long; sepals narrowly oblong, 2–4 cm. long; petals linear-lanceolate; corona in 3 series, the outer 2 filamentose, the innermost dentiform; fruit globose, about 5 cm. in diameter; seeds reticulate.

Junín: La Mejorada, 2,600 meters, *Killip & Smith 23345.*—Ayacucho: Anco, Río Mantaro Valley, 2,800 meters, *Killip & Smith 22178.* Huanta, 2,800 meters, *Killip & Smith 23332.*—Cuzco: Urubamba Valley, *Cook & Gilbert 824; Herrera 1673,* type of *P. thaumasiantha.* Mollepata, *Herrera 1223.*—Arequipa: Huaspa, *Raimondi 11479.* Also in Bolivia, where known only from the type specimen, collected by Pentland. "Tumbo tumbo," "kita tumbo."

Passiflora vespertilio L. Sp. Pl. 957. 1753.

Stem glabrous or finely puberulent; stipules narrowly linear-setaceous; petioles short, glandless; blades coriaceous, glabrous and lustrous above, glabrous or slightly puberulent beneath, 2–3-lobed, the lobes divaricate, acuminate, the upper margin usually truncate, often also undulate; bracts setaceous; flowers 4–5 cm. wide, yellowish green; sepals broadly lance-oblong, obtuse; petals oblong, shorter than the sepals; corona 2-ranked, the outer filaments narrowly liguliform, united at the base into a broad membrane, the free filaments 1–1.5 cm. long, the inner filaments capillary, much shorter; operculum closely plicate; ovary ovoid, glabrous; fruit subglobose, 1–1.5 cm. in diameter; seeds transversely sulcate.

Loreto: Río Nanay, *Williams 1201.* Iquitos, 100 meters, *Williams 8180.* A common plant of the Guianas and Amazonian Brazil, barely entering northern Peru and Bolivia.

Passiflora vestita Killip, Field Mus. Bot. 19: 473. 1938.

Plant densely rufo-hirsute nearly throughout; stipules semi-annular about the stem, laciniate nearly to the base, the segments filiform, gland-tipped; petioles glandless but bearing numerous gland-tipped hairs; blades 7–15 cm. long, 6–12 cm. wide, 3-lobed, truncate

or cordate, densely glandular-ciliate, the lobes ovate-lanceolate, acute or acuminate, the lateral lobes suberect; bracts 4–5 cm. long, pinnatisect or obscurely twice-pinnatisect, the segments filiform, gland-tipped; fruit globose, about 4 cm. in diameter; seeds obcuneate, about 8 mm. long and 5 mm. wide, tridentate, reticulate at the middle of each face, smooth toward the margin.

Loreto: Between Yurimaguas and Balsapuerto, 135–150 meters, *Killip & Smith 28126*, type.

Passiflora vitifolia HBK. Nov. Gen. & Sp. 2: 138. 1817. *P. punicea* R. & P. ex DC. Prodr. 3: 329. 1828.

Stem, petioles, and peduncles densely ferruginous-tomentose; stipules setaceous, deciduous; petioles biglandular at the base, rarely with additional glands; blades up to 15 cm. long and 18 cm. wide, 3-lobed to below the middle, irregularly repand-dentate or crenate, tomentulous on the nerves above, densely puberulent or tomentulous beneath; peduncles up to 9 cm. long; bracts oblong to oblong-lanceolate, 1.5–2.5 cm. long, 4–8 mm. wide, acuminate, glandular-serrate, reddish; flowers scarlet; calyx tube cylindric, 1–1.8 cm. long; sepals lanceolate, 6–8 cm. long; petals linear-lanceolate, slightly shorter than the sepals; corona 3-ranked, the 2 outer ranks filamentose, the outermost filaments 1.5–2 cm. long, red or yellow, the next ones somewhat shorter, pale red, the third rank tubular, pale red, short-filamentose; ovary densely tomentulous; fruit ovoid, about 5 cm. long, puberulent; seeds reticulate.

San Martín: Juanjuí, Alto Río Huallaga, 400–800 meters, *Klug 4190*.—Without definite locality: *Ruiz & Pavón*, type of *P. punicea*. Common from Nicaragua to Amazonian Venezuela; rare in Ecuador.

Passiflora Weberbaueri Harms, Bot. Jahrb. 54: Beibl. 117: 79. 1916.

Plant essentially glabrous; stipules broadly semi-ovate or semicordate, up to 1.7 cm. long, lacerate; petioles bearing 2 pairs of stipitate glands; blades trifoliolate, the leaflets oblong to ovate-lanceolate, 6–14 cm. long, 2–5 cm. wide, subsessile or short-petiolulate, acuminate, serrate, coriaceous; peduncles 7–12 cm. long; bracts oblong or ovate-oblong, 4–4.5 cm. long, free to the base, lacerate-serrate; flowers white; calyx tube urceolate-campanulate, up to 1.5 cm. long; sepals narrowly lanceolate, 5–6 cm. long; petals broadly linear, slightly shorter than the sepals; corona in 3 series, the outer 2 ranks filamentose, the innermost membranous, short-filamentose; ovary velutinous.—F.M. Neg. 3285.

Cuzco: Cosñipata, 2,700–2,800 meters, *Weberbauer 6933*, type. Yanamayo, 2,200–2,400 meters, *Pennell 14040*.

2. DILKEA Mast.

Woody vines (the Peruvian species), glabrous throughout, without tendrils or rarely with a few poorly developed ones; leaves alternate, petiolate, simple, entire; bracts minute, subulate; flowers (in the Peruvian species) in sessile or subsessile glomerules, white, the sepals 4, oblong, 2 broader than the other 2, united below the middle when young to form a cylindric or funnel-shaped tube, at length separating to the base and readily deciduous, the petals 4 or 5, free; corona 2-ranked, the outer rank consisting of slender, free or nearly free filaments, the inner tubular in the lower part, cleft above into floccose, crispate threads or into segments margined with such threads; operculum none; stamens 8, hypogynous; ovary subsessile or borne on a short gynophore; fruit globose or ovoid.

Dilkea is confined to the middle and upper Amazon Basin, and is known from only a few collections. Five species are at present recognized but additional material may well show that the genus is monotypic.

Sepals not more than 1.5 cm. long; ovary subsessile; leaves obovate. *D. parviflora.*

Sepals 2–3 cm. long; ovary borne on a short gynophore.

Leaves cuneiform, truncate at the upper margin except for a short lobe at the center. . . . . *D. retusa.*

Leaves broadly ovate to oblong-oblanceolate, rounded or acuminate. . . . . *D. Wallisii.*

Dilkea parviflora Killip, Field Mus. Bot. 19: 575. 1938.

Leaves obovate, 15–18 cm. long, 8.5–10.5 cm. wide, rounded at the apex, coriaceous; flowers white; sepals and petals oblong, 1.2–1.5 cm. long, obtuse; outer corona filaments narrowly liguliform, about 1.3 cm. long, the inner ones narrowly flabellate, about 1 cm. long, densely crispate-floccose at the margin in the upper half.

Loreto: Mishuyacu, 100 meters, *Klug 1158*, type.

Dilkea retusa Mast. Trans. Linn. Soc. 27: 628. 1871.

Leaves cuneiform, 15–20 cm. long, 7–11 cm. wide, coriaceous, the lateral nerves divaricate at nearly a right angle from the midnerve, slightly ascending; sepals and petals oblong, 1.5–2.5 cm. long; outer corona filaments liguliform, 2–2.5 cm. long, the inner filiform

in the lower half, spatulate-dilated in the upper half and margined with floccose, crispate threads.

Loreto: Mishuyacu, 100 meters, *Klug 1017*.

Dilkea Wallisii Mast. in Mart. Fl. Bras. 13, pt. 1: 622. *pl. 106, f. 3*. 1872.

Leaves ovate to oblong-oblanceolate, 12–15 cm. long, 5–10 cm. wide, abruptly acuminate at the rounded apex, rounded or cuneate at the base, coriaceous, the lateral nerves ascending; sepals and petals oblong, 2.5–3 cm. long; outer corona filaments narrowly ligulate, about 2 cm. long, the inner filiform below the middle, spatulate-dilated in the upper half and margined with floccose, crispate threads; fruit depressed-spherical, up to 2.5 cm. long and 4.5 cm. wide.

Loreto: Florida, Río Putumayo, at mouth of Río Zubineta, 200 meters, *Klug 2100*. Gamitanacocha, Río Mazán, 100–125 meters, *J. M. Schunke 233*.

CARICACEAE. Papaya Family

Low or often tall and simple-trunked trees usually characteristic in appearance by virtue of the ample, somewhat peltate, palmately lobed or 7–9-foliolate leaves crowded and spreading or drooping from near the tips of the branchlets and often overhanging the melon-like fruits. Flowers usually unisexual, the male and female corollas dissimilar, the former panicled, the latter solitary or, if panicled, usually few and crowded. Corolla with a long slender tube, the limb horizontally divaricate, the 5 petals soon caducous.—The sap of the leaves is milky, sometimes orange-colored.

Calyx and corolla segments alternate with each other; stamens rarely coalescent below.....1. *Carica*.

Calyx and corolla segments, at least the male, opposite; stamens usually coalescent below.....2. *Jacaratia*.

1. CARICA L.

Reference: Solms-Laubach in Mart. Fl. Bras. 13, pt. 3: 174–195. 1889.

Stamens 10, 5 sessile or subsessile, alternating with the corolla lobes, 5 inserted in the throat on short filaments. Style wanting or short, rarely elongate, the stigmas 5, entire to variously divided.

The Peruvian species all belong to the section *Vasconcellea* (St. Hil.) Solms-Laubach, characterized by 5-celled fruits (unless when

young 1-celled above) and simple or only 2-lobed stigmas. Kuntze referred all the species to *Papaya* (Tourn.) Adans. Heilborn has recently, Sv. Bot. Tidskr. 30: 224. 1936, described *C. pinnatifida* from northwestern Bolivia with ovate-lanceolate subpinnatifid leaves but with 1-celled fruit and branched stigmas.

The sweetly delicious—at its best—"papaya," *C. papaya* L., the well-developed tree as beautiful as the fruit is attractive, is sometimes cultivated in Peru as in all warm countries but is unknown anywhere in a wild state; it may well have originated from one or the other of the following, several of which are more or less satisfactory as food and which have long been planted by the inhabitants in the mountain villages. Among the Peruvian forms it is recognizable by its 1-celled fruits, mostly divided 5–7 leaf-lobes and irregularly branched stigmas. It was found cultivated (and collected) by Williams at Caballo-Cocha and La Victoria.

Apart from its fruit the papaya is valuable because the sap yields an enzyme, "papaïn," with strongly digestive properties on proteins; it is therefore a commercial product in medicine. It is commonly reputed in the tropics that meat may be made tender by washing it in the diluted juice, or by cooking it with the leaves, or even by enveloping it with them for some hours.

Besides the above reference I am indebted to Harms' review of some South American species with special attention to the Peruvian, Notizbl. Bot. Gart. Berlin 8: 91–100. 1922, from which careful synopsis I have freely drawn. As he remarks, it is necessary for an adequate study that collections be made showing female flowers and also fruits, both of which for a number of described species are partly or quite unknown. Determinations, unless otherwise mentioned, are mostly by Harms.

The following key, purely artificial, applies to the more usual leaf-forms; the constant characters are found in the inflorescence (flowers, particularly style) and in the fruit, but herbarium material at present shows these characters only partially. The flowers except in two species, *C. monoica* and *C. erythrocarpa*, are dioecious; and in the dioecious species the male and female inflorescence so far as known is subequal and elongate only in *C. gossypiifolia* and *C. platanifolia;* the male inflorescence is contracted in *C. glandulosa*, *C. lanceolata* and *C. candicans*, and laxly paniculate in the remaining species (so far as known). Besides the following there is a specimen by Klug (*3687* from Zepalacio near Moyobamba distributed as *C.*

platanifolia), but its male flowers are too long and borne in a greatly elongate very lax panicle; it is, perhaps, allied to *C. paniculata.*

Leaves not lobed, sometimes more or less dentate.

Margin of leaves entire.

Leaves white pubescent beneath.....*C. candicans.*

Leaves glabrous, often white-glaucous beneath.

Leaves oblong-lanceolate, more or less glaucous beneath or narrowly long-acuminate.

Leaves narrowly long-acuminate; male corolla tube 8–10 mm. long.....*C. acuta.*

Leaves acute or acuminate at tip.

Male corolla tube 6–8 mm. long; leaves mostly about 1 dm. long.....*C. lanceolata.*

Male corolla tube 11–12 mm. long; leaves mostly 1.5 dm. long or longer.....*C. glandulosa.*

Leaves ovate-elliptic to broadly ovate, rather abruptly acuminate, concolor or only lighter green beneath.
C. heterophylla.

Margin of leaves coarsely dentate.....*C. Augusti.*

Leaves all or most of them deeply lobed or divided, the lobes entire or lobed or dentate.

Leaf lobes 3, more or less coarsely serrate.....*C. Weberbaueri.*

Leaf lobes entire or more or less lobed or parted or with a few remote teeth.

Leaves repandly or shallowly 3–5-lobed, the margins repandly and remotely dentate, usually some lobes entire; male and female peduncles both elongate, subequal...*C. platanifolia.*

Leaves 3–7-lobed, the lobes entire or lobed; male inflorescences generally much longer.

Leaves deeply 3-parted, the divisions narrowly linear.
C. glandulosa.

Leaves variously lobed, the lobes broader and not linear.

Leaves of an ovate or ovate-lanceolate type, or if about as broad as long the lobes ovate-lanceolate, and, especially, the male inflorescence long, narrow, lax.
C. heterophylla.

Leaves typically palmate-suborbicular or when rarely simulating *C. heterophylla*, the male inflorescence relatively short, congested.

Male and female peduncles subequal; leaves 5-lobed. *C. gossypiifolia.*

Male and female peduncles very unequal.

Leaves glabrous or glabrate.

Leaf lobes 7, at least the basal overlapping. *C. parviflora.*

Leaf lobes not overlapping at the open base.

Leaf lobes 3, entire; flowers monoecious; fruits scarlet..... *C. erythrocarpa.*

Leaf lobes 5–7, or 3 but at least 1 lobe then more or less lobed.

Leaf lobes oblong-lanceolate, acute; flowers monoecious; fruits yellow..... *C. monoica.*

Leaf lobes ovate; flowers dioecious.

Leaf divisions broadly ovate; style short or obsolete..... *C. paniculata.*

Leaf divisions narrowly acute; style 5–6 mm. long..... *C. stylosa.*

Leaves minutely but densely pilose beneath, especially on the nerves..... *C. pubescens.*

Carica acuta O. Heilb. Sv. Bot. Tidskr. 30: 220. 1936.

Dioecious-flowered tree similar to *C. lanceolata* but the narrower leaves long- and acutely narrow-acuminate; male flowers 12–14 mm. long, the rather rounded-triangular sepals to 1 mm. long, the corolla tube 8–10 mm. long; anther connective of short stamens slightly protruded; female flowers 12–16 mm. long otherwise with the sepals similar to the male; style indistinct, the 5 stigmas linear and entire. —To 10 meters high, flowering at leafing. Female flowers illustrated, Heilb. l.c. 219.—Harms l.c. 100, referred these collections to *C. lanceolata.* Sap whitish, flowers greenish.

Apurímac: Among Cacti and shrubs, Hacienda Cuycuhua, 2,800 meters, *Weberbauer 7170; 7171* (types). "Jalasacha."

Carica Augusti Harms, Notizbl. Bot. Gart. Berlin 11: 280. 1931.

Simple-stemmed glabrous shrub with long-petioled oblong-elliptic or lanceolate, sometimes rather obovate, irregularly dentate leaves that are white-glaucous beneath and sparsely provided with coarse setae or gland-like processes on the nerves and veins, a number of them also congested at the juncture with the petiole to form a ring; leaves 2 dm. long, 8 cm. wide, often larger, rounded at base, acumi-

nate; male racemes 6–11 cm. long, the sparsely pilose pedicels 3–4 mm. long; calyx barely 2 mm. long, 5–6-parted nearly to base; corolla 15–19 mm. long, the tube 9–12 mm. long, the 5 lanceolate segments acute, 6–8 mm. long; longer filaments sparsely pilose, the anther connective shortly produced as also for the shorter stamens; female peduncles 14–16 cm. long; young fruit lance-ovoid, narrowly winged.

Recalls in its gray-backed toothed leaves *C. Weberbaueri* but that species has 3-lobed leaves; it also suggests *C. glandulosa* as regards the glaucous leaves and the glands but the leaves of the latter are entire margined; so, with the related *C. Weberbaueri*, it may meritoriously, as Harms has appropriately decided, perpetuate the name of the great student of the Peruvian flora.—To 3 meters high, the flowers greenish.

Ayacucho: In shady forest among shrubs, Choimacota Valley, 2,700 meters, *Weberbauer 7563*, type. "Monte papaya."

Carica candicans Gray, U. S. Expl. Exped. Bot. 640. 1854; 177. *Vasconcellea candicans* (Gray) A. DC. Prodr. 15, pt. 1: 417. 1864. *C. integrifolia* Raimondi, Elem. Bot. 2: 230. 1857, fide Weberbauer.

Sparingly branched, foliate only during the winter or wet season, with broadly ovate, subcordate palmately 3 (–5)-nerved entire or sinuate margined leaves, green above, thinly white-tomentose-floccose beneath; leaves sometimes with 3–4 large lateral teeth, attaining 2 dm. in length; male peduncles 2.5–5 cm. long, shorter than the petioles, the many greenish-white flowers shortly pedicelled; calyx 5–7-lobed; corolla tube 12 mm. long, the 5–7 lobes half as long; female flowers solitary, at least usually on pedicels 2–2.5 cm. long, the lanceolate sharp calyx teeth about 3 mm. long, the corolla lobes 2–2.5 cm. long, narrowly lanceolate; fruiting pedicel 5–7 cm. long, the fruit cucumber-shaped, blunt at the smaller base and at tip, obscurely 5-angled, 10–13 cm. long, 3–4 cm. thick, the many seeds imbedded in the fleshy pulp; sarcotesta (outer husk) of the seeds slimy within, the seeds ovoid, about 8 mm. long without the sarcotesta, the inner seed coat brown and nearly smooth when dry (Harms).

Low tree (to about 3 meters high) with thick, often sprawling or irregularly growing trunks, characteristic for the lomas and the western Andean slopes to around 3,000 meters. On the coast it blooms during the dry period or summer season and many examples in this leafless state are nearly bizarre, especially if standing alone

on some stony outcrop; it grows during the moist or rainy season which on the coast corresponds to winter. The fruits are called "Mito" and have a good odor and not unpleasant taste (Ruiz & Pavón); when ripe the taste is sweet and the aroma delightful (Raimondi). Weberbauer, opposite page 143, shows a photograph of a tree in leaf, referring to it frequently in the text, 117, 118, 143, 158, 161, 163, 164, 173, 174, 176. I found it commonly eaten but dry, fibrous and seedy, the flavor, however, pleasing.

Lima: Between Lima and Obrajillo, *U. S. Exped.*, type. Obrajillo, *Ruiz & Pavón.* Viso, among rocks, *770.* Matucana, rocky place, 2,370 meters, *Weberbauer 267; 1693.* Lomas, Mount Amancaes, 300 meters, *Weberbauer 5717.*—Arequipa: Prov. La Union, Cotahuasi, 2,700 meters, open shrub, cactus, herb formation, *Weberbauer 6865* (det. Krause).—Moquehua, *Weberbauer 7354.* "Ulicana," "papayo," "mito," "jerju."

Carica erythrocarpa Linden & André, Ill. Hort. 18: 31. *pl. 51.* 1871; 184.

Trunk simple; petioles grooved above, 10–20 cm. long; leaves 3-lobed, the lobes ovate-lanceolate, entire, acuminate, green above, paler beneath and with some evanescent hyaline trichomes; calyx of masculine flowers minute or obsolete; fruit shortly peduncled, scarlet, subcostate, lustrous, the size and shape of a hen egg but shortly cusped at tip, with many large black suberose seeds.—Fruit at first taste sweet, but later disagreeable (André).

Peruvian locality according to Wallis, "Reiseerinnerungen," in Gartenflora 25: 301. 1876, but described from plants cultivated by Linden, the seed supposed to be from region of Guayaquil, collected by Wallis, apparently otherwise unknown.

Carica heterophylla Poepp. & Endl. Nov. Gen. & Sp. 2: 60. *pl. 182.* 1838; 180. *Vasconcellea heterophylla* A. DC. Prodr. 15, pt. 1: 417. 1864.

Often low or to 2 meters high, with ample membranous glabrous leaves, ovate acute or acuminate, mostly entire or more or less hastate and 3-lobed, the middle segment broad and largest or now and then shortly lobed, the main division sometimes short, sometimes extending to below the middle, rarely even pinnately lobed; petioles 4–6 cm. long or longer; male racemes very lax, greatly elongate, narrow and little branched, the female shortly peduncled, 1–3-flowered; male flowers slender, 16 mm. long, the tube scarcely more than 0.5 mm. wide, the lobes 5 mm. long, very narrow; fruit the size

and form of a walnut, the seeds 7 mm. long with tubercles nearly 2 mm. long.—Sometimes to 5 meters high, the male flowers yellowish (Ule). Highly variable in leaf-character but the oblong, loose male inflorescence distinctive. *C. baccata* Heilb. Acta Hort. Berg. 9: 105. 1928, Ecuadorian, has ovate subpinnatifid leaves, 3 acute lobes widely spreading on each side, the male inflorescence short. Flowers white (Klug).

San Martín: San Roque, *Klug 7249* (det. Standl.). On Río Mayo near Tarapoto, *Spruce 4345* (det. Solms-Laubach); *Williams 5237; 5261; Killip & Smith 27627* (all det. Harms).—Loreto: Yurimaguas, *Poeppig*, type. Pumayacu, *Klug 3162* (det. Standl.). Near Iquitos, *Klug 648* (det. Harms). Cerro de Cumbaso, *Ule 6758*. Río Itaya, *Killip & Smith 29424; 29793* (det. Harms). Brazil. "Mamorana."

Carica lanceolata (A. DC.) Solms-Laubach, l.c. 179. *Vasconcellea lanceolata* A. DC. Prodr. 15, pt. 1: 416. 1864.

Fascicles of leaves and flowers sometimes from the older branches; petioles to 2.5 cm. long; leaves glabrous, unparted and entire-margined, lanceolate, obtuse or nearly cordate at base, acute or obtusely acuminate, to 8 cm. long, 2.5 cm. wide, glaucous beneath and sometimes with a few tubercles near the petiole; male peduncles often twice as long as the petiole, many-flowered, the corolla tube 6–8 mm. long; anther connective shortly extended above the cells.—Doubtless, if Peruvian(!), from southern Peru. The sap is orange-colored, the plant poisonous (Kuntze). Female flowers 10–12 mm. long; ovary with truncate top, the style 2 mm. long, the stigma linear, entire (Heilborn). F.M. Neg. 38430. Illustrated, female flowers, Heilborn, Sv. Bot. Tidskr. 30: 219.

Cuzco(?): *Gay*, type. Bolivia; Argentina.

Carica monoica Desf., Ann. Mus. Hist. Nat. Paris 1: 273. *pl. 18*. 1802; 183. *Vasconcellea monoica* (Desf.) A. DC. Prodr. 15, pt. 1: 418. 1864.

Petioles 12–16 cm. long; leaves suborbicular, only shallowly cordate, ample, glabrous or sometimes granulate on the nerves near the petiole, often 3-lobed with oblong-lanceolate pointed lobes, only 4–6 cm. wide, the middle lobes mostly 3-lobed, or 5–7-lobed, the margins entire or lobulate at base; flowers monoecious, the inflorescence short, thick, with few blossoms; tube of male corolla 14–16 mm. long, villous within, the lobes oblong; connective of lower anthers produced, ovate, subcrenate; upper anthers glandular only apically;

female petals 18 mm. long, linear-oblong.—Described from cultivated specimens, Paris. Fruit insipid but the leaves a substitute for cabbage; the Indians of Pampa Hermosa collect the seeds in the quebrada of Chinchao where the plant grows abundantly (Ruiz & Pavón). F.M. Neg. 13701. Illustrated, Bot. Mag. *pl. 3633*.

Huánuco: Pozuzo, *Ruiz & Pavón*. "Col de montana."

Carica paniculata Spruce ex Solms-Laubach, l.c. 177. *C. leptantha* Harms, Notizbl. Bot. Gart. Berlin 8: 95. 1922.

Glabrous dioecious shrub; petioles 12 dm. long or longer; leaves broadly ovate or even suborbicular, cordate at base, membranous, above the middle 3–5-lobed, the middle lobe ovate or obovate, the lateral longer, all entire or often with broad, short, lateral lobes or the lateral rarely trilobed, obtuse, acute or all acuminate; male inflorescence many-flowered, divaricately branched at apex, sometimes sparsely puberulent, the pedicels obscure or lacking; flowers rose-colored; calyx 1–1.5 mm. long, shortly 5-denticulate; corolla tube 10–15 mm. long, the lobes 4–6 mm. long; filaments shortly coalescent at base, the anther connective of the outer scarcely or not produced, that of the sessile inner long-extended; peduncle of fruiting inflorescence 2–4 cm. long with 2–5 pedicels 4–7 mm. long; fruit ovate-lanceolate, scarlet, pointed, 2–2.5 cm. long, the obtusely verrucose seeds oblong-ovoid, 5–6 mm. long.—Shrub 0.5–2 meters high, leafless at flowering. The leaves (*6009*) with 3-lobed middle lobe, sometimes with small, broad, lower lobes (Weberbauer). Description after Harms.

Nearly as variable as *C. heterophylla* in leaves but all sinuses, basal as well as lateral, very open and rounded, the lobes rounded to a short point or even obtuse. Allied to *C. parviflora*, 177, with deeply 7-lobed leaves, the lobes mostly 3-lobed, these narrower, the more sharply acute divisions overlapping, especially the basal ones, as not at all in *C. paniculata*. *C. stenocarpa* Heilb. Sv. Bot. Tidskr. 30: 221. 1936 of northern Bolivia appears to be related but the leaf sinuses are extremely sharp. Perhaps *Weberbauer 7080* at 2,300 meters, below Hacienda Soquian, Libertad, a 5-meter shrub with tiny greenish male flowers, no leaves, belongs to *C. paniculata* or to a new related species (Harms). Cf. also the species mentioned under *C. pubescens* which, being glabrous, would be sought here. From the material seen Harms seems to have relied on a drawing in Herb. Berlin in separating his species. F.M. Negs. 13700 (*leptantha*); 13702.

Tumbez: Hacienda Chicana, *Weberbauer 7659b; 7659c*.—Cajamarca: Below San Pablo, 1,000 meters, *Weberbauer 3803*. Los Reyes,

near Cajamarca, *Weberbauer 4806*.—Piura: Above Piura at Chanro, *Weberbauer 6004*. Between Chanro and the Haciendo San Antonio, 500 meters, *Weberbauer 6009* (see remarks above). Ecuador.

Carica parviflora (A. DC.) Solms-Laubach, l.c. 177. *Vasconcellea parviflora* A. DC. Prodr. 15, pt. 1: 417. 1864.

Large-leaved species with small and delicate male flowers; petioles 1–2 dm. long; leaves lighter green beneath, appearing peltate by the overlapping sinuate lower lobes, deeply 7-parted, the obovate lobes mostly 3-lobed, acute or acuminate; male inflorescence long-peduncled, many-flowered, the pedicels 2 mm. long; calyx minute; corolla tube 8 mm. long, villous within, the lobes 3–4 mm. long, ovate-oblong; upper stamens apically 1-glandular, the connective of the anthers of the lower shortly produced.—*C. paniculata* Spruce is distinguishable, according to Solms-Laubach, by the divergent lobes of the leaves.

In all probability this or *C. pubescens* is the species referred to by Ruiz and Pavón as the "seven-lobed Carica" which they found at Pozuzo: the fruit, called "papaya," is the size of a small melon with a taste somewhat similar, but to improve it longitudinal incisions must be made in it some days before eating so that the milky sap that is somewhat bitter may drain (Ruiz & Pavón).

Huánuco: Pozuzo (cf. above), *Ruiz & Pavón*.

Carica platanifolia Solms-Laubach, l.c. 182.

Stem succulent, the branches elongate; petioles 3 dm. long, the large chartaceous glabrous leaf blades 3–5-lobed, sometimes to the middle, the broadly acuminate divisions with a few sharp teeth; both male and female inflorescences densely flowered and long-peduncled, the peduncle even to 2.5 dm. long; male flowers about 10 mm. long, the calyx small, the linear acute lobes and slender corolla tube subequal, only the lower anthers with a short process; female flowers in pseudo-umbels of 5–6, 2–5 cm. long, 5 mm. broad, the petals extremely narrow, the calyx extremely minute.—Solms-Laubach suggested the original locality as Cuchero; probably Peru or Ecuador.

Peru(?): Without locality, *Ruiz & Pavón*.

Carica pubescens (A. DC.) Solms-Laubach, l.c. 185. *Vasconcellea pubescens* A. DC. Prodr. 15, pt. 1: 419. 1864.

Branches, petioles, leaves beneath and inflorescences lightly pubescent, the pubescence persisting, especially on the leaf nerves beneath; petioles greatly elongate, the large leaves broadly cordate,

deeply 5–7-parted, the middle lobe 3–5-lobed, the oblong lower and lateral lobes oblong, mostly 1-lobed; the lobes not rarely have 1 or 2 broad teeth and the middle lobe is usually 3-lobed with elongate pointed lobules, the lateral lobes descending and mostly with a lobule on the outer lower side; male peduncles 2.5–6 cm. long; calyx deeply 5-parted, the lobes less than 2 mm. long; corolla glabrous within, the tube about 8 mm. long, the linear-lanceolate lobes as long; connective of all anthers shortly produced, the filaments of the upper glabrous; female inflorescence (*Weberbauer 6997*) very short, few-flowered, the corolla segments 2.5 to nearly 3 cm. long, the young fruit with five 2-branched styles.—Description compiled from the five original sheets, and Harms, l.c. 97, as other descriptions herewith; Harms saw only a scrap of the type but identity with the Weberbauer plant seems certain. Much planted in mountain villages in the east, the fruit about the size of a hen's egg and eaten when cooked with sugar, but not raw. Flowers greenish, mostly among the leaves but also below on the old wood; sometimes only male sometimes only female on the same shrub (Weberbauer).

The cultivated "Chamburú" of Ecuador, *C. candamarcensis* Hook. f. Bot. Mag. 101: *pl. 6198.* 1875, has pleasant-tasting yellow fruits, 5-celled stigmas (bifid) similar to cacao pods in shape and size. Heilborn in Arkiv Bot. 17, pt. 12: 1, 2. 1921 has described two related, but glabrous species or races, viz., *C. chrysopetala* (flowers reddish-yellow) and *C. pentagona*, this known as "babaco"—it has a distinctly sympetalous female corolla—and has shown that the Hooker species is Ecuadorian and, in fact, dioecious. F.M. Neg. 8512.

Huánuco: Cultivated at San Rafael, near Ambo, 2,700 meters, *Weberbauer 6685;* also *6997*, fide Harms, but locality not given by him. Pozuzo, *Ruiz & Pavón*, type. "Chamburú," "chiluacán."

Carica stylosa O. Heilb. Sv. Bot. Tidskr. 30: 218. 1936.

Tall glabrous herb or with a few trichomes on the principal nerves and petioles; leaves palmate, cordate at base, even to 5 dm. long, deeply 5-parted, the narrow acute lobes deeply pinnatifid; male inflorescence 1.5–2 dm. long, the flowering branchlets short, many flowered; sepals about 1 mm. long; corolla tube 18 mm. long, the segments 7 mm. long; connective of outer stamen anthers scarcely produced, that of the inner long-extended; female inflorescence to 7 cm. long, the flowering branchlets to 5 cm. long; flowers 2–2.5 cm. long, the petals linear; ovary 5-celled, the style 5–6 mm. long, the

5 stigmas 10–15 mm. long, linear, entire.—Illustrated, Heilborn, l.c. 219 and 221.

San Martín: San Roque, southeast of Moyobamba at edge of manioc and maize plantations (*Douglas Melin 175; 279*, types).

Carica Weberbaueri Harms, Notizbl. Bot. Gart. Berlin 8: 94. 1922.

Shrub or tree, the branches probably as the elongate petioles sparsely hispidulous or scabrous; leaves ovate or oblong-ovate, rounded or emarginate at base, often acuminately 3-lobed above the middle, large (the middle lobe often 2.5–4 dm. long), the lobes more or less dentate-margined or even incised, puberulent-pilose on the nerves and veins beneath as well as glaucous; male inflorescence 3–20 cm. long, sometimes hispidulous-pilose, the branchlets 1–2 cm. long or shorter, the pedicels 2–5 mm. long; calyx barely 2 mm. long; corolla tube 2 cm. long or longer, the width (pressed) 4 mm., little pilose within, the divisions 12–15 mm. long; longer filaments sparsely pilose, the connective shortly produced, the connective of the subsessile inner stamens sparsely pilose dorsally and produced; apical gland none or minimal.—No other species except *C. Augusti* has such strongly toothed leaves. To 9 meters high, the blossoms brownish-green.

Libertad: In evergreen bush, 2,000 meters, valley system of the Mixiollo, *Weberbauer 7072*, type. Ecuador.

JACARATIA [Marcgr.] Endl.

Branching shrubs or tall trees, aculeate at least below, with palmately divided leaves, the 5–12 leaflets sessile or petiolate. Calyx and corolla divisions more or less clearly opposite at least in the male flowers. Filaments usually somewhat coalescent.—Otherwise like *Carica*, all species considered, and only to be regarded as a genus for convenience.

Jacaratia digitata (Poepp. & Endl.) Solms-Laubach, Mart. Fl. Bras. 13, pt. 3: 191. 1889. *Carica digitata* Poepp. & Endl. Nov. Gen. & Sp. 2: 60. 1838. *J. spinosa* (Aublet) A. DC. var. *digitata* (Poepp. & Endl.) A. DC. Prodr. 15, pt. 1: 419. 1864.

Tall tree with white, soft, spongy bark, the trunk and branches armed with stout broad-based prickles, these, reduced in size, sometimes extending even to the branchlets and petioles; petioles 15–20 cm. long, the leaves 5–7-foliate, the shortly to markedly petioled leaflets becoming obovate-lanceolate, abruptly acuminate, entire,

glabrous, 1–1.5 dm. or so long, about half as wide; male peduncle as long or longer than the petioles, the flowers subsessile, 1.5 cm. long, their stamens unequal; fruit oblong, obscurely costate, the seeds with a fragile brown coat.—To 30 meters high. The male flowers are extraordinarily malodorous (Poeppig). The bark yields an astringent sap (Williams).

The tree, according to Poeppig, is notorious among the Indians for its poisonous qualities; they even fear to sleep beneath it lest they become afflicted with sores which become gangrenous and which the sap is said to cause. Poeppig describes the fruits, however, as insipid but not poisonous, inodorous, yellow. Klug, on the other hand, observed that the inhabitants make holes in the soft bark; these holes then become filled with maggots (Coleoptera) the size of a fat finger, which are collected for food. Illustrated, Mart. Fl. Bras. 13, pt. 3: *pl. 51.*

San Martín: Juanjuí, 400 meters, *Klug 3816.*—Loreto: Río Cochiquinas, Yurimaguas, *Poeppig*, type. Río Itaya, *Williams 3342.* Puerto Limon, *Tessmann 3858.*—Río Acre: *Ule 9646; Krukoff 5446.* Near Iquitos, *Klug 1222.* Brazil. "Shamb-uru," "chamburú," "papaya-haspi," "mamao brabo."

LOASACEAE

Reference: Urban & Gilg, Nova Acta Acad. Leop.-Carol. 76, pt. 1. 1900.

Usually erect or climbing herbs characteristically more or less provided with barbed and often stinging hairs, the plants not infrequently "sticky" to touch. Leaves opposite or alternate. Flowers hermaphrodite, the 4–7 calyx lobes persistent, the petals as many, generally 5. Stamens usually indefinite, staminodes often present, and often nectariferous scales, various in size and form. Ovary usually inferior, 1–5-celled, the style entire or 2–3 parted, the fruit a 1–3-celled capsule.—For convenience the above work is hereafter referred to as Monogr. Loas. It is detailed and painstaking, and the following synopsis of the many Peruvian forms is compiled from it.

Stamens 5; vine, cucurbitaceous in aspect.....1. *Gronovia.*

Stamens 10–many.

Stamens all fertile or the outer petaloid or filiform..2. *Mentzelia.*

Stamens in fascicles opposite the petals and fertile, others alternate, sterile, mostly transformed into scales.

Petals 4; staminodia free.

Fertile stamens 4–14, 1–4 before the petals, 6–10 sterile, 1–3 before the sepals; capsule spiraled.....3. *Sclerothrix.*

Fertile stamens 12–28, 3–7 before the petals, 16–20 sterile, 4–5 before the sepals; capsule straight....4. *Klaprothia.*

Petals 5–7; outer staminodia united into a nectariferous scale.

Capsule straight, clavate or obconic, dehiscent apically between the lobes; Peruvian species not scandent.5. *Loasa.*

Capsule usually spirally distorted, dehiscing laterally from below; plants often vines.....6. *Cajophora.*

1. GRONOVIA L.

Vine closely simulating some Cucurbitaceae by reason of the cordate leaves with lateral, divaricate, acuminate lobes and the peduncled cymose cylindrical flowers. Flowers subtended by filiform bracts. Sepals more or less connate. Staminodia none.

Gronovia scandens L. Sp. Pl. 202. 1753; 11.

Stems sparsely spreading hispidulous and also provided with conical hooked processes by which the plant "holds"; leaves very sparsely asperous, the sinus broad, the lobes entire or with 1–3 teeth; inflorescence 1–4 cm. long, 10–18-flowered; petals 3–4 mm. long, shorter than the sepals.—Illustrated, Baillon, Hist. Pl. 8: 463.

Piura: Ayavaca, 1,000 meters, *Weberbauer 6394.* Near Serrán, 250 meters, *Weberbauer 5995.*—Tumbez: Plain southeast of Hacienda La Choza, *Weberbauer 7698.* North to Mexico.

2. MENTZELIA L.

Reference: Darlington, Ann. Mo. Bot. Gard. 21: 103–226. 1934.

Variable as *Loasa* in vegetative character but the flowers often leafy-bracted; otherwise marked as indicated in the generic key.—The following is compiled from Miss Darlington's monograph, which is so satisfactory as regards the species of North America that her treatment is accepted; however, on the basis of material seen, the validity of the South American forms in several instances seems open to question. In any case more material is needed to prove or disprove the soundness of the characters here used as indicating specific lines; accordingly the monographer's key is appended.

Calyx tube and capsule cylindrical, somewhat attenuate at base. *M. aspera.*

Calyx tube obconical or turbinate, distinctly attenuate below, usually pedicellate.

Leaves sessile; stamens in 2–3 series.

Stamens 40–50, in 2 (rarely 3) series.....*M. ignea.*

Stamens 50–60, in 3 series.....*M. cordifolia.*

Leaves petiolate; stamens in 4 series.....*M. Fendleri.*

Mentzelia cordifolia Dombey ex Urb. & Gilg, Monogr. Loas. 74. 1900; 121.

Often bushy spreading, the papery bark of the older branches defoliating; leaves sessile, the upper more or less cordate clasping usually with a short lobe at base each side and a few coarse teeth, to 6 cm. long, 3.5 cm. wide, scabrous; flowers orange, terminally crowded; petals 10–20 mm. long, half as wide, glabrous; calyx tube with stipe 7–8 mm. long; capsule subcylindrical attenuate at base to stipe, 2–8 mm. long, scabrous, the seeds apparently not margined. —But the seeds as to type of *M. cordifolia* are immature! *M. soratensis* Urb. & Gilg, 68, from northern Bolivia seems to be only a form with somewhat narrower leaves, capsules subsessile; its seeds are apparently margined and to it Miss Darlington has referred *Pennell 13069* from Tiabaya, Arequipa, considered by Killip as *M. ignea,* which see. Possibly the specimen from southern Peru will prove to be a variety of one of the older species. The petals of the material from Chancay are about 15 mm. long. Common according to Weberbauer, 100, 158, 163. A specimen by Ward from Matucana was det. by Ball, *M. hispida* Willd., a similar but larger-flowered Mexican species. F.M. Neg. 24161.

Lima: Chancay, Ruiz & Pavón; *Dombey,* type. San Buenaventura, *Pennell 14568* (det. Darlington). Near Viscas, *Pennell 14472* (det. Darlington). Quive, *Pennell 14313* (det. Darlington). Matucana, *130* (det. Killip); *Weberbauer 89;* 160.—Cajamarca: San Miguel, *Weberbauer 3923;* 188, 189.—Huánuco: Stony slopes, *3215* (det. Killip).—Arequipa: *Raimondi.* Mejia and Pasco (*Günther & Buchtien,* det. Bruns).— Cuzco: Apurímac, *Herrera 1220.* Valle del Urubamba, Weberbauer, 175. Ecuador to Bolivia. "Manca-r'ajra," "manca-ppaqui."

Mentzelia Fendleriana Urb. & Gilg, Mem. Torrey Club 3, pt. 3: 34. 1893; 117.

With the habit and characters of *M. cordifolia* but the middle and lower leaves at least minutely petiolate and narrowly ovate-lance-

olate or oblong-lanceolate, green; petals 17–22 mm. long; stamens 70–80 in four series; capsules subsessile to well-pedicelled; seeds of *M. cordifolia.*—*M. scabra* HBK., 116, credited to "Colombia, Ecuador and Peru" by the monographer, who, however, cites specimens only from Colombia, has 100–120 stamens and ovate leaves.

Piura: Talara, *Haught 5.*—Lima: (*Cuming 1011*).—Junín: Uspachaca, *1296* (det. Killip).—Cuzco: Ollantaytambo (*Cook & Gilbert 280; 545,* fide Darlington); *Herrera 3413.* Near Urubamba, *Herrera 1529; 1336* (det. Killip). Yucay, *Soukup 575.* Anta, *Vargas 299* (det. Standl.). Ecuador; Bolivia; Venezuela; Chile? "Manca-ppaqui."

Mentzelia ignea (Phil.) Urb. & Gilg in Engler & Prantl, Pflanzenfam. 3, 6a: 110. 1894; 122. *Loasa ignea* Phil. Anal. Mus. Nac. Chile, Bot. 1891: 24. 1891.

Similar to *M. cordifolia* but with only 40–50 stamens in 2 or 3 series; seeds ovate-oblong, grayish or brownish-yellow, irregularly striate-verruculose, not winged, thus as in *M. cordifolia* and probably the earliest name for the species sens lat. F.M. Negs. 10127; 38488.

Lima: (*Gay,* fide Urban & Gilg).—Amazonas: Chachapoyas, *Mathews 596; Weberbauer 4360* (det. Urb. & Gilg).—Arequipa: (*Cockerell,* fide Darlington). Tiabaya, *Pennell 13069* (det. Killip).

3. SCLEROTHRIX Presl

Ancyrostemma Poepp. & Endl. Nov. Gen. & Sp. 3: 65. *pl. 272.* 1845.

Essential characters as in key.

Sclerothrix fasciculata Presl, Symb. Bot. 2, pt. 6: 4. *pl. 53.* 1833. *Ancyrostemma micranthum* Poepp. & Endl. l.c. *Blumenbachia micrantha* [R. & P.] G. Don, Gard. Dict. 3: 62. 1834.

Annual with opposite, thin, minutely dentate, petioled leaves about 3 cm. long, 1.5 cm. wide, often much larger, ovate-oblong-elliptic, acute both ends, sparsely short-pilose both sides, as the stem; flowers few, terminal on short axillary branchlets, the petals about 1.6 mm. long; capsule tardily spiraled, 4–9 mm. long.—Illustrated, Mart. Fl. Bras. 13, pt. 3. *pl. 53.*

San Martín: Tarapoto, *Ule 6415.* San Roque, *Williams 7625; 7017.*—Amazonas: Chachapoyas, *Mathews.*—Huánuco: Cuchero, *Poeppig* (type, *A. micranthum*). Pozuzo, *4545.*—Cuzco: *Gay.* Rosalina, 650 meters, *Bues.*—Junín: Pichis Trail near San Nicolas, *Killip & Smith 26124.* Brazil to Mexico.

4. KLAPROTHIA HBK.

Sprawling herb with opposite, ovate, dentate leaves and few-flowered cymes of rather small white flowers. Essential character as in key.

Klaprothia mentzelioides HBK. Nov. Gen. & Sp. 6: 123. *pl. 537.* 1823.

Leaves ovate, rounded at base or little contracted to the petiole, acuminate, 5–8 cm. long, 2–4 cm. wide or larger, somewhat scabrous-pilose, bullate-rugose in age above; petals 4, 6–8 mm. long; capsules obovate.

Junín: Pichis Trail, Dos de Mayos, 1,700 meters, *Killip & Smith 25878.*—Puno: Region of Sandía, 1,500 meters, *Weberbauer 1070* (det. Urban). In the mountains, Bolivia to Colombia and Venezuela.

5. LOASA Adans.

Annual or perennial herbs, usually with stinging hairs, sometimes half shrubs, rarely vines, the leaves alternate or opposite, the flowers generally yellow, less frequently white or red. Flowers 5–7-merous, petals plane, concave, naviculiform or cucullate. Nectar-scales from 3 (4–7) staminodia, connate, concave or sac-like, usually with 3 (2–7) threads from the back or below the tip, the 2 (–4) interior staminodia linear or subulate. Stamens many, the filiform filaments in fascicles opposite the petals. Ovary rarely somewhat superior, always 1-celled. Capsule straight, clavate or obconic, rarely subglobose, dehiscent between the calyx lobes, the seeds rarely few.

In all the Peruvian species the scales are 3-nerved and the staminodia 2, and none truly scandent have yet been found. The characters said to separate *L. picta* from similar species may not be specific.

Capsules 4–5-valved the valves placed before the calyx lobes; leaves rather ashy-puberulent both sides; branchlets sublignescent with whitish lustrous defoliating thin bark.....*L. incana.*

Capsules 3–5-valved the valves alternating with the calyx lobes.

Leaves, unless the uppermost, pinnate or trifoliate.

Leaves mostly trifoliate.....*L. triphylla.*

Leaves pinnate or bipinnate.....*L. urens.*

Leaves variously lobed, sometimes pinnately, or toothed to subentire.

Pedicels more or less adnate to the axis of the pseudoraceme; petals apparently 5–6 mm. long..... *L. inconspicua.*

Pedicels not at all adnate to inflorescence axis; flowers longer.

Scales not bisaccate at base, sometimes more or less inflated.

Perennial with cordate-orbicular leaves; scales with threads. *L. heucheraefolia.*

Annuals or if perennial the leaves not orbicular; scales naked.

Petals 16–25 mm. long; scales more or less saccate.

Petioles short, the upper leaves sessile; sepals ovate.

Leaves ashy tomentose and esetulose beneath; inflorescence simple..... *L. carunculata.*

Leaves setose on nerves; inflorescence pseudopaniculate..... *L. macrothyrsa.*

Petioles elongate, even the upper; sepals linear *L. laxa.*

Petals 7–13(15) mm. long; scales not at all inflated.

Leaves opposite; scales appendaged below; seeds few, large..... *L. nitida.*

Leaves opposite; scales smooth; seeds many *L. solaria.*

Leaves alternate; seeds many, small.

Petals broadly clawed; leaves subentire, stipulate. *L. Stuebeliana.*

Petals not clawed; leaves dentate, never stipulate.

Scales with a horizontal fold or band; leaves deeply sinuate-dentate..... *L. leiolepis.*

Scales with two horizontal bands; leaves unequally dentate..... *L. chenopodifolia.*

Scales at or near base definitely bisaccate.

Flowers small, the petals, especially if 12–25 mm. long, obviously clawed at base and cymbiform.

Leaves not subpinnately lobed.

Scales with several transverse plicae above the sacs. *L. picta.*

Scales with 1–2 ridges between sacs and tip.

Leaves esetulose or nearly.

Petals entire; leaves sessile unless the lowest. *L. hastata.*

Petals toothed above the broadly clawed base; leaves petioled, serrate.....*L. fulva.*

Leaves evidently setulose.

Leaves subequally serrate, rounded or subcordate. *L. Poissoniana.*

Leaves irregularly serrate, scarcely rounded at base.....*L. ferruginea.*

Leaves subpinnately lobed, the toothed lobes extending about half way to the midrib.

Petals about 15 mm. long; staminodia and scales subequal.....*L. cuzcoensis.*

Petals about 25 mm. long; staminodia much longer than scales.....*L. Vargasii.*

Flowers showy, the petals usually 2–5 cm. long or in any case not at all or very shortly clawed, sometimes cymbiform.

Petals oblong or nearly, acute or obtusish, in any case not obovate and broadly rounded at apex.

Leaves serrate or repandly lobulate.

Subscandent plant with small (3 cm.) leaves.*L. lenta.*

Erect or suberect plants, the leaves larger.

Petals about 3 cm. long; petioles 1–3 cm. long.

Upper petioles about 1 cm. long; scales efilamentose.....*L. solaria.*

Upper petioles 2.5–3 cm. long; scale filamentose. *L. loxensis.*

Petals about 2 cm. long; petioles elongate.

Leaves narrowed below.....*L. olmosiana.*

Leaves rounded at base.....*L. tingomariensis.*

Leaves irregularly lobed or coarsely serrate, often jaggedly.

Petals somewhat cymbiform; scale neck entire or minutely bilobed.

Petals 3–4.3 cm. long; leaves subequally lobed. *L. grandiflora.*

Petals 5 cm. long; leaves unequally lobed. *L. macrantha.*

Petals plane; scale neck 3-toothed.....*L. magnifica.*

Petals obovate, broadly rounded at apex.
Leaves suborbicular or reniform, often cordate.
Leaves peltate.....*L. peltata.*
Leaves not peltate.
Petals 4 cm. long; leaves fleshy.....*L. rugosa.*
Petals 2.5–3 (–4) cm. long; leaves thin or firm.
Leaves opposite.
Petals esetulose, 1 cm. wide.....*L. Aspiazui.*
Petals slightly setulose, 2 cm. wide.
L. limata.
Leaves alternate.
Leaves, even the lowest, repandly serrate.
L. macrorrhiza.
Leaves coarsely lobed-dentate.
Petals 2.5 cm. long; scale neck 2–3-lobed.
L. ranunculifolia.
Petals 3–4 cm. long; scale neck 3-lobed.
L. magnifica.
Leaves ovate or triangular-ovate.
Petals 4–5 cm. long.
Petals 5 cm. long; leaves herbaceous.
L. macrophylla.
Petals 4 cm. long; leaves coriaceous.
L. Weberbaueri.
Petals about 2 (3) cm. long.....*L. carnea.*

Loasa Aspiazui Macbr., spec. nov.

Herba perennans; caulibus petiolisque conspicue bruneo-setosis paullo vel vix strigillosis; foliis superioribus suboppositis, fere orbiculatis basi distincte cordatis, obscure lobulatis et sparse calloso-denticulatis circa 1 dm. longis et latis, supra sparsissime minuteque setulosis, subtus praesertim ad nervos longe setosis; floribus ut videtur in apice caulis circa 5, cincinnose collectis; pedicellis circa 1 cm. longis; calycis lobis adpresse bruneo-setulosis et minute strigillosis 12 mm. longis, basi 4 mm. latis, acuminatis, tubus ovoideis 7 mm. crassus densissime rufo-setosus; petalis firmo-chartaceis puberulentis planis apice rotundatis 25–28 mm. longis, 10–11 mm. latis; squamis 8 mm. longis, dorso sub medio bicalcaratis (calcaribus 5 mm. longis), filis nullis, alis ventralibus supra collum (collo 3-lobulato) fere 3 mm.

oblongo-productis; staminodiis pilosis 12 mm. longis; staminibus circa 20 mm. longis.

Apparently related to *L. alpina* Urb. & Gilg, and with similar scales but that Ecuadorian species has deeply lobed leaves. Named for Dr. R. Aspiazu, Lima physician; cf. note under *Fuchsia Aspiazui*.

Junín: Río Masamerich, 3,200 meters, *Weberbauer 6669*, type.

Loasa carnea Urb. & Gilg, Bot. Jahrb. 45: 469. 1911.

Several dm. tall with sparsely setose herbaceous stem, but perhaps perennial; lower petioles to 12 cm. long, the upper leaves ovate-oblong, cordulate or truncate at base, acute, more or less deeply lobed, the ovate-triangular acute lobes obsoletely serrate, sparsely and shortly asperous both sides with a few setae intermixed on the veins and nerves, the larger to 8 cm. wide; inflorescence lax, few to 7-flowered, the pedicels to 1.5 cm. long; calyx tube about 5 mm. long, to 5 mm. wide, densely setose, the ovate lobes 6–7 mm. long, 4 mm. wide at base; petals plane, obovate-oblong, rounded at apex, scarcely 2 cm. long, half as wide; scales 6–7 mm. long.—Allied to *C. aurantiaca* Urb. & Gilg, 209, Ecuadorian, with denticulate leaf lobes, fewer larger flowers, the calyx lobes narrow and twice as long. Flowers flesh-colored; common shade plant (Weberbauer). F.M. Neg. 10182.

Cajamarca: Woods by Chugur, 2,700 meters, *Weberbauer 4082*.

Loasa carunculata Urb. & Gilg, Monogr. Loas. 243. 1900. *L. vestita* Killip, Journ. Wash. Acad. Sci. 19: 194. 1929.

Stems erect, straight, to several dm. high, clothed with reddish-yellow smooth trichomes and smooth setae, both 1–1.5 mm. long, intermixed; leaves alternate, the lower shortly petioled, oblong-lanceolate, rounded at base, acute, deeply 8–12 lobed and dentate-serrate, to 17 cm. long, 7 cm. wide, laxly asperous above with bulbous based hairs, beneath gray-tomentose, the trichomes slender and smooth, setae completely lacking; calyx tube 7–8 mm. long, reddish-setose, the oblong-lanceolate lobes about 1 cm. long; petals apparently orange, cymbiform, 17–19 mm. long, contracted for two-fifths of their length into a claw 2–2.5 mm. broad at base; scales at the base about 1.5 mm. broad, at one-fifth their height more or less obscurely saccate-inflated, sometimes scarcely so, then narrowed to the top, this portion conspicuously calloused; staminodia 2, 9–10 mm. long, dilated at base, then suddenly geniculate-incurved. —Illustrated, scales and staminodium, Urb. & Gilg, l.c. *pl. 6*.

Peru(?): Without locality, *Lobb 358*, type.—Huancavelica: Gravelly hillsides, 2,400 meters, Mejorada, *Stork & Horton 10905*.—Ayacucho: North of Huanta, grassy steppe, 3,500 meters, *Weberbauer 7591* (type, *L. vestita*).

Loasa chenopodifolia Desr. in Lam. Encycl. 3: 580. 1791; 231. *L. xanthiifolia* Juss. Ann. Mus. Hist. Nat. Paris 5: 26. 1804.

Erect annual to 4 dm. high, with erect spreading branches more or less densely pubescent with small retrorse trichomes; lower leaves often opposite, the lax upper alternate, the petioles to 3 cm. long, sometimes half as long as the ovate leaf blade, this to 5 cm. broad, unequally serrate and crenate-dentate, not at all setose, loosely asperous above, rather densely ashy puberulent-pilose beneath; flowers in pseudo-racemes, to 1.5 dm. long; calyx tube 7–8 mm. long, 2.5–3 mm. broad above, pubescent with an ashy puberulence and brown setae intermixed, the lobes 4–5 mm. long, 2–2.5 mm. broad at base; petals white, 9–10 mm. long, narrowed but not clawed at base; scale 3.5–4 mm. long, 2.5–3 mm. broad at base, strongly saccate or inflated-convexed only in the upper part with 2 thickened parallel lines or folds, apically strongly callous-thickened, the neck recurved-crenulate, or 3-lobed, the 3 nerves ascending to the tip, the margin itself strongly produced into teeth 1.5 mm. long; staminodia about 5 mm. long, inflated basally.—Illustrated, Tratt. Archiv Gewächsk. 1: *pl. 26*. F.M. Neg. 10183.

Lima: Near Huamatanga, *Dombey; Jos. Jussieu*, type. Viso, *577*.—Amazonas: Chachapoyas, *Mathews 3002*.

Loasa cuzcoensis Killip, Journ. Wash. Acad. Sci. 18: 91. 1928.

Stout stemmed annual several dm. high, the stem pubescent with small whitish hairs and brown setae intermixed; petioles 0.5–3.5 cm. long, alternate or subopposite, the leaves ovate to lance-ovate, 5–12 cm. long, 3–10 cm. wide, subpinnately lobed, the 7–9 acute lobes sharply serrate, hispidulous and sparingly setose; flowers 5-merous, the peduncles to 3 cm. long; calyx densely and divaricately brown setose, the ovate lobes 5–6 mm. long; petals obovate, about 15 mm. long, 6 mm. wide, cucullate distally, clawed toward base, slightly pilose without, apparently light yellow; scales triangular-ovate, about 5 mm. long, bisaccate toward base, the sacs much inflated, callous, thickened toward apex, otherwise smooth, the marginal teeth lanceolate, scarcely 1 mm. long; staminodia 2 in each scale, subulate, 4–5 mm. long; anthers purplish; capsule 2 cm.

long, nearly 1 cm. wide.—Series *Saccatae*, apparently nearest *L. ferruginea* and *L. Poissoniana*. Is employed in popular medicine as a diuretic and cultivated for its flowers (Herrera).

Cuzco: San Sebastián, 3,200 meters, *Herrera 1465*, type; also Cuzco in March, *Herrera 2363*, and at 3,000 to 3,600 meters, July, 1923, *Herrera; Soukup 41*. Sacsahuamán above Cuzco, *Pennell 13571* (probably, fide Killip). Valle del Urubamba, *Herrera 3380*. "Iscai-ckorota," "china-quisa."

Loasa ferruginea Urb. & Gilg, Monogr. Loas. 225. 1900.

Erect, the slender (about 4 mm. thick) stems densely clothed with long brown setae and small white trichomes intermixed; lower leaves opposite, on petioles to 1 cm. long, the oval or oval-oblong blades to 2.5 cm. long, 17 mm. wide, unequally serrate-dentate, subrounded or subacuminate at base, acute, fulvous setose above and beneath on the nerves; calyx tube 4–5 mm. long, 3–4 mm. thick above, pubescent like the stem, the narrowly ovate lobes about 4 mm. long; petals 11–12 mm. long, narrowly clawed below one-third to one-fourth of their length, densely pilose without; scales about 4 mm. long, bisaccate above the base, strongly calloused and also thickened apically, and with a horizontal fold or band, the marginal teeth 1.2–1.3 mm. long; staminodia 7 mm. long; capsule about 2 cm. long, 5–6 mm. wide.—Probably should be included in *L. Poissoniana*. F.M. Neg. 10187.

Cuzco: San Sebastián, 3,200 meters, *Herrera 522*.—Puno: *Lechler 1897*, type. Bolivia? "China quisa."

Loasa fulva Urb. & Gilg, Monogr. Loas. 224. 1900.

Closely allied to *L. ferruginea* but more branched and only sparsely setose; leaves esetose or rarely a few setae obvious on the midnerve beneath; petals 8–10 mm. long, broadly clawed one-fourth to one-fifth their length; staminodia about 5 mm. long, little exceeding the scales.—Otherwise apparently like *L. ferruginea*. The indument on leaves beneath and on calyx is especially fine and short. There is an herbarium name by Ruiz & Pavón referring to the asperity. F.M. Neg. 10191.

Peru: Without locality, the type cultivated in 1846 at Berlin.—Lima: Santa Clara, *Weberbauer 1672* (det. Urb. & Gilg); 145. Lima & Chancay, *Ruiz & Pavón* (det. Werderm.).

Loasa grandiflora Desr. in Lam. Encycl. 3: 580. 1791; 202. *L. cymbopetala* Urb. & Gilg, Bot. Jahrb. 45: 468. 1911.

Loosely bushy-branching when well-developed, the sparsely puberulent stems as well as the abundant rufous bristles lustrous; petioles, leaves both sides and calyx lobes puberulent-pilose, rather more densely pilose and cinereous beneath, scattered setose above and on the nerves especially on the under surface; lower leaves suborbicular and 5-lobed, the upper more ovate, deeply pinnately lobed, the lobes more or less lobed or unequally toothed; lower pedicels sometimes several cm. long; calyx lobes gradually acuminate, 13–18 mm. long, 5–7 mm. wide; petals navicular-concave or probably when living less so, 3–4 cm. long, 10–15 mm. wide, medially setose without, thin; scales 13–17 mm. long, the 2 incurved subglobose calluses a fourth as long, the minutely notched front of the scale a little shorter than the triangular wings; staminodia narrowly subulate, pilose on the middle part; filaments about 100, 2–2.5 cm. long, the anthers 3–3.5 mm. long; capsule 15–17 mm. long, pilose and setose, 3-valved; seeds 1.5–1.7 mm. long, elevated reticulate, blackish.—Petals and saccate base of green scales light red (K. & S.). There is sometimes, if indeed not always, more or less glandulosity. The species is the type of several segregated variants which may prove not to be distinct, and the key characters need proving by more collections. The long hairs are extremely stiff, easily penetrating thick gloves; the flowers are deep orange (Ball). F.M. Negs. 10185; 24171. Illustrated, Urb. & Gilg, *pl. 5* (flower parts); Juss. Ann. Mus. Hist. Nat. Paris 5: *pl. 4*.

Lima: Chicla (*Ball*); *Weberbauer 250;* 169. San Mateo, *Raimondi; Isern.* Near Lima, *Jos. de Jussieu*, type; *Dombey; Ruiz & Pavón; Mathews; Abadia.* Río Blanco, *2977; Killip & Smith 21710* (my collection det. Killip as *L. macrorrhiza*).—Junín: Tarma, *Ruiz & Pavón* (locality mistake?).—Ancash: grass-shrub formation, 3,300 meters, above Ocros, *Weberbauer 2758* (type, *L. cymbopetala*).

Loasa hastata Killip, Journ. Wash. Acad. Sci. 18: 92. 1928.

Erect, somewhat succulent annual, the stem 12 mm. thick below, densely setose with pale setae about 0.5 mm. long, and toward the top, with many longer setae, brown and 2 mm. long; lower, nearly opposite, ovate-lanceolate leaves with petioles to 1.5 cm. long, the alternate upper sessile, more hastate, 3–10 cm. long, 1.5–7 cm. wide, acuminate to a subacute or obtuse tip, subcordate or subtruncate at base, irregularly sinuate-lobed, hispidulous but glossy above, finely pilose beneath; flowers 5-merous; calyx 3–4 mm. long, the lobes 6–7 mm. long; petals 13–15 mm. long, clawed below, green tinted, sparingly setiferous on nerves without; strongly inflated

scales about 6 mm. long, bright yellow and red shading into rose-pink, the neck with 2 thick horizontal bands, the lanceolate teeth 1 mm. long; staminodia 8 mm. long; capsule 2 cm. long, 5 mm. broad, pilose and densely long-setose.—Series *Saccatae*.

Lima: Wet, sunny places, 2,500 meters above Matucana, *416*, type.

Loasa heucheraefolia Killip, Journ. Wash. Acad. Sci. 18: 90. 1928.

Perennial, the subligneous tomentulous and more or less setose stem to 1 cm. thick; setae very slender; leaves alternate or subopposite, the petioles 2–4 cm. long, the orbicular blades 3–6 cm. long, shallowly and irregularly 7-lobed, the lobes undulate-crenate, cordate with narrow sinus, tomentulous, pilosulous and sparingly setose both sides; flowers white, 5-merous, axillary, solitary(?), the peduncles 1–1.5 cm. long; calyx 8–10 mm. long, 10 mm. wide, pilosulous-setulose, the lobes 8 mm. long, half as wide; petals 15 mm. long, 8 mm. wide, narrowed at base; scales rectangular, 5 mm. long, 4 mm. wide, the 3 nerves slightly inflated and terminating in a filament 3 mm. long; staminodia subulate, 12–14 mm. long; stamens about 50; anthers oval, 1.2 mm. long.

Ancash: Moist cliff pockets, Tambo de Pariocota, *2543*, type.

Loasa incana Grah. Edinb. Phil. Journ. 11: 169. 1830; 260. *L. atriplicifolia* Presl, Symb. Bot. 1: 61. *pl. 39*. 1832.

Often bushy-branched and about 3 dm. (–2 m.) high, the branches characteristically marked by the white paper-like outer bark that is more or less breaking off; leaves alternate, ovate, often about 3.5 cm. long, 3 cm. wide, truncate or slightly subcordate, acute, more or less deeply dentate on the sides or even lobulate; calyx tube about 4 mm. broad, the entire ovate lobes 6 mm. long, petals 13–15 mm. long, cochleariform, rather narrowly clawed, glabrous within, greenish-white; scales 3-nerved; capsule nearly subglobose.—Plants more or less grayish puberulent-tomentose. Illustrated, Urb. & Gilg, l.c. *pl. 7;* Bot. Mag. *pl. 3048*.

Piura: Pariñas Valley, *Haught 111; 186*.—Lima: *Pavón; Rivero; Mathews; MacLean*. Matucana, *257; Isern 2245*. Quive, 1,200 meters, *Pennell 14309*. Obrajillo, *Ruiz & Pavón*.—Arequipa: Near Islay, *Orbigny*.

Loasa inconspicua Urb. & Gilg, Monogr. Loas. 221. 1900.

Annual, the slender stems about 2.5 dm. high, puberulent and above somewhat setulose; petioles 1 cm. long; leaves alternate,

ovate-oblong, equally dentate or with few large teeth alternating with the smaller, sparsely setose as well as scabrous above, densely pilose beneath, to 3 cm. long, 17 mm. broad; flowers in pseudo-racemes, the pedicels 13 mm. long, or shorter, always more or less adnate to the axis; calyx tube 7–8 mm. long, 2–3 mm. thick, the lobes 3–4 mm. long, 1.5 mm. broad, rounded or scarcely acute; petals apparently only 5 or 6 mm. long; capsules about 14 mm. long, 3 mm. thick, scabrous.

Peru(?): Eastern part (*Cuming 1051*).

Loasa laxa Macbr., spec. nov.

Herba ut videtur perennans; caulibus plus minusve tortuosis minute strigillosis haud setulosis; petiolis elongatis, ad 8 cm. longis setulosis; foliis ovatis vel oblongo-ovatis, basi subtruncatis utrinque 2–3-lobulatis, margine calloso-denticulatis, superioribus alternis, ad 15 cm. longis, 10 cm. latis, membranaceis, ubique minute hispidulis; floribus ut videtur in cymam dispositis, cymae ramis inflorescentiisque ex axillis foliorum superiorum laxe cincinnoseque evolutis, conspicue setulosis et minute strigillosis; calycis segmentis fere linearibus 8 mm. longis, 1–1.5 mm. latis; petalis 6 subplanis, oblongis, acutiusculis, 16 mm. longis, 4 mm. latis, longe setulosis; squamis 4 mm. longis, manifeste saccato-inflatis, ultra saccum in collum contractis, collo supra saccum callis incrassatis ornato, marginibus superne ad apicem dilatatis; staminodiis 7 mm. longis; staminibus vix 6 mm. longis.

Apparently most closely allied to *L. carunculata* Urb. & Gilg, 243. The collector's data for the collection in Field Museum is wanting.

Peru: *Weberbauer 6993*, type.

Loasa leiolepis Urb. & Gilg, Monogr. Loas. 230. 1900.

Puberulent-stemmed, short-setose, alternate-leaved annual; petioles to 1 cm. long; leaves ovate-oblong, rounded or acutish at base, shortly decurrent on the petiole, with 2–5 serrate lobules or large teeth, sparsely asperous or nearly glabrate above, densely pilose-puberulent beneath and esetose, unless a few setae on the nerves; calyx tube 4–5 mm. long, to 3 mm. broad, the narrow lobes to 6 mm. long, sometimes minutely denticulate, in fruit becoming 8 mm. long; petals 7–8 mm. long, scarcely clawed; scales dorsally smooth but with a thick horizontal bend above, the tip itself callous-thickened, the marginal teeth about 1 mm. long.—Puberulence rusty and plant with aspect of *L. fulva*. Type cultivated 1843 at Berlin, said probably to be of Peruvian origin. F.M. Neg. 10200.

Puno: Sandía, *Weberbauer 562.*—Amazonas: Chachapoyas, *Raimondi.*

Loasa lenta Macbr., spec. nov.

Planta verosimiliter perennans; caulibus adscendentibus vel subscandentibus breve setosis; petiolis 2 cm. longis, dense setulosis et hispidulis; foliis oppositis, ovatis, serratis, basi subtruncatis, acuminatis, plerumque 3 cm. longis, 2 cm. latis, supra sparse setulosis, subtus plus minusve hispidulis et setulosis; floribus in apice caulis ramorumve in monochasia 2–4-flora dispositis; pedicellis 5–10 mm. longis; calycis lobis oblongo-lanceolatis, acutis, leviter setulosis 10 mm. longis, 2.5 mm. latis, tubus 5 mm. crassus dense setosis; petalis 17 mm. longis, fere 10 mm. latis, planis, glabris, vix acutis; squamis 7 mm. longis, calcaribus squamae duplo brevioribus, filis nullis, collo manifeste 3-lobo, marginibus subito aliformi-dilatatis; staminodiis (pilosis) staminibusque 10 mm. longis.

Seems from the herbarium material to be a clambering plant with tough stems; flowers scarlet. Series *Alatae.*

Huánuco: Near Muña, *Weberbauer 6722,* type.

Loasa limata Macbr., spec. nov.

Ut videtur herba annua ad 0.8 m. alta; caulibus petiolisque nitidis parce setosis; petiolis (supremis) oppositis circa 5 cm. longis; foliis fere rotundato-ovatis circa 1.5 dm. longis, basi inaequaliter cordatis, irregulariter serrato-lobulatis, lobulis acutis, denticulis calloso- vel glanduloso-apiculatis, ubique parcissime setulosis, subtus minutissime pilosis, praesertim supra intense viridibus, membranaceis; floribus in axillis foliorum superiorum 1–2 dispositis; calycis segmentis 10 mm. longis, basi 3.5 mm. latis, acuminatis, parce setosis, tubus densissime brunneo-setosus, ovoideus, 5 mm. crassus; petalis planis, membranaceis, solum ad nervum medium parcissime setulosis, apice rotundatis, 3 cm. longis, fere 2 cm. latis; squamis 15 mm. longis, calcaribus circa squama 3-plo brevioribus, filis nullis, alis ventralibus 2–2.5 mm. latis supra collum parte circa 4 mm. triangulari-productis, collo fere truncatis; staminibus quam petala manifeste brevioribus; staminodiis glabris circa 15 mm. longis.

"Flowers salmon-orange, the glands dark red." Series *Alatae;* near the Ecuadorian *L. aurantiaca* Urb. & Gilg, 209, with smaller leaves, setosely ciliate, twice as long calyx lobes, papillose staminodia; suggests also *L. acuminata* Wedd., 198, of Ecuador, with much longer calyx lobes, pilose staminodia.

Apurímac: Ampuy, in black loam, 3,200 meters, *Stork, Horton & Vargas 10624*, type.

Loasa loxensis HBK. Nov. Gen. & Sp. 6: 116. 1823; 216.

More or less suffrutescent perennial, the leaves except the lowest alternate; petioles 2.5–3 cm. long, the ovate leaf blade somewhat decurrent or truncate, acuminate, with 2–3 broadly triangular lobes above the middle, the margins minutely glandular-dentate, scabrous above, puberulent-tomentose beneath and setose on the nerves both sides or esetose beneath; pedicels 1–1.5 cm. long; calyx tube 4–5 mm. broad, densely hirsute, the lobes 8–12 mm. long; petals flat or nearly so, about 3 cm. long, 7–8 mm. broad, shortly reddish hirsute dorsally; scales 11 mm. long with 3 very short threads below the neck or these obsolete, the scale wing dilated, the wings 5 mm. long; filaments as long as the petals; capsule to 17 mm. long, 10 mm. broad at top.—The Peruvian specimen is smoother than the typical form, the leaves dark green above with a few asperous trichomes and short setae on nerves, only pilose beneath, the margins repand and subentire to shallowly lobed. Related species found as near as Ecuador include *L. campaniflora* Tr. & Planch., 218, similar, but the lanceolate calyx lobes 15 to 23 mm. long, and scale wings shorter; and *L. aurantiaca* Urb. & Gilg, 209, *L. calycina* Benth., 210, both distinguished by the stamens being evidently shorter than the petals, the calyx lobes about 17 mm. long, and from each other by the size of the flowers, the petals of the former being at least 3 cm. long, those of the latter scarcely 2. F.M. Neg. 10202.

Amazonas: Chachapoyas, *Mathews*. Ecuador.

Loasa macrantha Urb. & Gilg, Bot. Jahrb. 45: 468. 1911.

Perennial herb, the stems and branches densely setose; upper leaves with petioles to 1 cm. long, the blades broadly ovate to suborbicular, to 9 cm. long, 8 cm. wide, unequally 5-lobed, the middle lateral lobes larger, all acute, unequally serrate-lobed, above sparsely, underneath densely pilose and both sides especially on nerves somewhat setulose; pedicels 5–6 cm. long, setose, the 3–4 flowers igneous; calyx 7–8 mm. long, as broad, setose as the lanceolate very acute lobes, these also pilose, 2 cm. long, 7 mm. wide; petals somewhat concave, about 5 cm. long, 1.5 cm. wide, acute; scales about 15 mm. long.—Allied to *L. grandiflora* Desr., 202. F.M. Neg. 10203.

Junín: Grass steppe with scattered shrubs, 3,400 meters, mountains east of Palca, *Weberbauer 2494*, type.

Loasa macrophylla Urb. & Gilg, Bot. Jahrb. 45: 467. 1911.

Erect perennial to 1 meter high with ovate-rotund leaves to 2.5 dm. long and broad and large 5-merous salmon-rose colored flowers in terminal and upper-axillary cymes; petioles 5–6 cm. long; leaves unequally and deeply 5-lobed, the larger middle one unequally lobed-serrate, the others unequally serrate, all acute, both sides densely short pilose, marginally setulose; pedicels 5 cm. long; calyx densely long-setose; petals nearly plane, rounded base and apex, about 5 cm. long, 22–25 mm. wide; scales nearly 2.5 cm. long.—Allied to *L. argemonoides* Juss., 195, Colombian, with different leaves and flowers (Urban & Gilg). F.M. Neg. 10204.

Ancash: Along trail, above Ocros, 2,900 meters, *Weberbauer 2718*, type.

Loasa macrorrhiza Urb. & Gilg, Bot. Jahrb. 45: 467. 1911.

Perennial apparently from a much-divided horizontal rhizome, the densely setose flowering stems to 4 dm. high; pubescent and sparsely setose petioles of the densely crowded basal leaves 6–8 cm. long, the leaf blades suborbicular, 4 cm. long to 6 cm. wide, broadly cordate at base, unequally and more or less deeply lobulate-serrate but not lobed; stem leaves much smaller, shortly petioled, similar in form, all of both sides short-pilose, with no setae or very few; flowers 2–3, igneous color, the densely setose pedicels 5–8 cm. long; calyx 7–8 mm. long and as broad at top, setose, as slightly also the very acute lanceolate lobes, these 15 mm. long, 5–6 mm. wide; petals obovate, rounded at tip, dorsally setose, 25–27 mm. long, 15 mm. wide; scales about 16 mm. long.—Allied to *L. ranunculifolia* Humb. & Bonpl., 201, with lobed leaves. F.M. Neg. 10206.

Ancash: In moist rocky ravines, 4,100 meters, above Huaraz, *Weberbauer 3080*, type.

Loasa macrothyrsa Urb. & Gilg, Bot. Jahrb. 45: 469. 1911.

Suffrutescent, strict, to 2 meters high, the terete lignescent stems densely long-setose; leaves alternate, the lower subsessile, all oblong, subcordate, acute, to 14 cm. long, half as wide, base to apex unequally and deeply dentate-lobed, the 5–8 lobes unequally serrate, gray-tomentose beneath, above laxly, beneath densely, on nerves with setae intermixed; flowers greenish-yellow, subnutant, in false panicles, pedicels to 1.5 cm. long; calyx tube 1 cm. long, 6 mm. wide, densely setose, the ovate-oblong lobes as long, 5–6 mm. wide; petals strongly cymbiform, 2–2.5 cm. long, 8–9 mm. wide; scales 8–9 mm. long, yel-

lowish with 2 horizontal reddish-brown lines.—Related to *L. carunculata* Urb. & Gilg. F.M. Neg. 10205.

Cajamarca: In open or closed formation at 2,400 meters, below San Miguel, *Weberbauer 3907*, type.

Loasa magnifica Urb. & Gilg, Monogr. Loas. 204. 1900.

Apparently in general like *L. grandiflora* but all or all but the lowest leaves alternate and the upper more broadly cordate; calyx lobes 17–23 mm. long, 7–12 mm. wide above the base; petals plane or nearly, 30–43 mm. long, 12–22 mm. wide, with a short claw 3–4 mm. wide; scales 18–22 mm. long, 4–6 mm. wide, the neck with 3 lobes 2–3 mm. long.—Petals orange-pink, filaments and scales (except pink sacs) white (K. & S.). In the type the leaves are very setose, sharply lobed and toothed; the following collections may represent a distinct species but only uppermost leaves are present, these clasping-sessile, repandly lobed or sub-entire.—Illustrated, Urb. & Gilg (flower parts), *pl. 5*. F.M. Neg. 10207.

Peru: Without locality, *MacLean*, type.—Lima: Río Blanco, *Killip & Smith* 21625. *Matucana, 369* (det. Killip). Above Obrajillo, *Pennell 24392?* (det. Killip).

Loasa nitida Desr. in Lam. Encycl. 3: 581. 1791; 132.

Pale-puberulent or glabrate, rather succulent, thin-leaved annual, essentially esetose except for a few pale bristles on the campanulate calyx; lower leaves decurrent on the petiole, the upper subamplexicaul, all more or less shallowly and repandly pinnate, the lobes with a few teeth or crenate, ovate, nearly glabrous above, rather ashy puberulent beneath, sometimes a dm. or more long; calyx tube 4–5 mm. long, the lobes 5–7 mm. long, 2–2.5 mm. wide; petals yellow, 7–8 mm. long, a little cucullate at tip, plane but not clawed at base; scales about 4 mm. long, with 3 lamelliform dorsal appendages; stamens to about 50; capsule thicker than long, scabrous, the valves 3.—Petals yellow, the nectaries blood-red on white back (Weberbauer). *L. triloba* Dombey with mostly trilobed leaves and capsules longer than thick, sometimes accredited to Peru, is in all probability Chilean, this surely the origin of the Dombey specimen. F.M. Negs. 24173; 38481. Here, because of its opposite leaves, would be sought the Bolivian *L. Herzogii* Urb. & Gilg, Meded. Rijks Herb. Leiden 29: 54. 1916 related to *L. chenopodifolia* but leaves opposite, on petioles 3–7 cm. long; petals 11–12 mm. long. Illustrated, Juss., Ann. Mus. Hist. Nat. Paris 5: *pl. 2;* Tratt. Arch. Gewächsk. 1: *pl. 23*.

Lima: Chancay, in sand and stone, *Ruiz & Pavón.* Lurin, *5938* (det. Killip). Near Lima, *Dombey,* type; *Abadia.* Amancaes Hill, *Isern; Weberbauer 1620;* 145.—Arequipa: *Raimondi.*

Loasa olmosiana Gilg, spec. nov. in herb.

Herba robusta perennans; caulibus petiolisque (petiolis 3–6 cm. longis) mediocriter setosis et hispidulosis; foliis alternis ut videtur late vel elliptico-lanceolatis basi apiceque sensim angustatis superioribus circa 2 dm. longis, 1 dm. latis, plus minusve obscure lobulatis, toto margine minute calloso-denticulatis, membranaceis, supra minute setulosis, subtus puberulis vel ad nervos sparse setulosis; calycis floribus laxe dispositis, pseudopaniculatis; lobis 17 mm. longis, 8–9 mm. latis, acuminatis, strigillosis, tubus vix 4 mm. crassus perdense setosis; petalis subplanis sparse setulosis et pilosis membranaceis acutis 22 mm. longis, 8 mm. latis; squamis 10–11 mm. longis, saccis paullo inflatis, filis nullis, collo integro marginibus superne sensim dilatatis supra collum 2.5 mm. productis atque 5.5 mm. aliformi-dilatatis; staminodiis 16 mm. longis; staminibus vix 15 mm. longis.

From the scales evidently a species of the *Alatae* but apparently undescribed.

Lambayeque: Olmos, *Weberbauer 7097,* type.

Loasa peltata Spruce ex Urban & Gilg, l.c. 205.

Lowest leaves densely crowded, the lower always peltate, suborbicular, the petiole joined at the lower third of the palmately 5–7-lobed blade, this about 5 cm. wide, the lobes ovate, obsoletely dentate; decreasing upper leaves not at all peltate, alternate as the lower, oblong-lanceolate, denticulate, finally sessile, all sparsely asperous with few short setae on nerves; flowers 5-merous, yellow, the pedicels to 13 mm. long; calyx 4–5 mm. long, 3–4 mm. thick, the lobes 12–13 mm. long, 3–4 mm. wide; petals slightly concave above, to about 22 mm. long and half as wide, densely pilose without but esetose, broadly clawed or narrowed at base; scales rectangular from the bicalcarate base, deeply bilobed by the extended "wings" (cf. *pl. 5,* Urban & Gilg).—Species unique in the peltate leaves, but related is *L. rugosa.*

Peru(?): Mount Mulmul (*Spruce,* type).

Loasa picta Hook. f. Bot. Mag. 75: *pl. 4428.* 1849; 222.

More or less puberulent-pilose as well as rusty-setulose annual, 1–several dm. high, often branching from the base; leaves rather few,

alternate, the petioles to 1.5 cm. long, the broadly oval to ovate blades to 6 cm. long and nearly as wide, cuneate at base, acute, coarsely serrate, the teeth often of two sizes, sparsely setulose as well as asperous above, puberulent beneath, both sides; calyx 6–7 mm. long, 3–4 mm. wide, the lobes about 4 mm. long, 2.5–3 mm. wide; petals 11–12 mm. long, narrowed to base, not clawed; scales from side saccate-convex, from back ovate, above the base with 2 dorsal strongly inflated calluses and with fold or callus above these and irregularly dotted or blotched, the tip thickened, the 3 nerves extended about 1 mm.; staminodia and the 50 or so filaments about 7 mm. long, the former pilose, strongly thickened at base; capsule more than 2 cm. long, 3–4 mm. thick.—The var. *Stuebeliana* Urb. & Gilg, 223, has oblong-lanceolate leaves to 10 cm. long, 4.5 cm. wide, long-cuneate at base, the longer petioles 5 cm. long, the flowers more than 3 cm. wide. Probably should include *L. Poissoniana* and *L. ferruginea*, which see. Type material was cultivated at Kew, and, according to Herrera also in Peru for its flowers, their scales yellow with transverse red stripes.

Amazonas: Chachapoyas, *Mathews*. Between Pacasmayo and Moyobamba at Tambo Viejo, 3,100 meters, *Stuebel* (the var.). Above Samanco (Weberbauer, 170) (at least this collection is typical). —Cajamarca: San Miguel, *Weberbauer 3887*(?).—Ancash: Region Huaraz, *Weberbauer 3146*(?).—Cuzco: Santa Rita, Valle del Urubamba, 2,300 meters, *Herrera 1550*. Huaillai, Marcapata, *Vargas 9709*(?). "Angel-tuana," "chino-quisa."

Loasa Poissoniana Urb. & Gilg, l.c. 226.

Like *L. ferruginea* and probably only a variety but the leaves ovate-oblong, the lower to 4 cm. long, 3–3.5 cm. wide, rounded or subcordate at base, the lower more or less deeply 3–5-sinuate-dentate or serrate-dentate, the teeth unequal; marginal teeth of scale rounded at tip, 1–1.2 mm. long.—Type probably, if Peruvian, from Cuzco region. Some material cited under *L. picta* may belong here with *L. ferruginea*. F.M. Neg. 38482.

Peru: *Gay 1975*, type.—Lima: Matucana, *179*. Ambo, *3154*. —Moquehua: *Weberbauer 7394*.

Loasa ranunculifolia Humb. & Bonpl. Pl. Aequin. 1: 50. *pl. 14*. 1806; 201.

Densely setose perennial with the general characters of *L. grandiflora* but well-marked by its closely appressed hirsute and scattered setose 7–9-lobed lower leaves, the lobes extending less than half

way and by its comparatively small flowers, the oval petals only 25 mm. long, 13–15 mm. wide; scales 12–13 mm. long, the neck only twice as long as the calluses and the wings more extended (cf. illustration, Urb. & Gilg, l.c. *pl. 5*).—The Ecuadorian *L. alpina* Urb. & Gilg, 197, has 5–7-lobed leaves and the ventral wings produced above the scale-neck are as long as the scale-body. My *1934* from Mito, Huánuco, referred by Killip to *L. ranunculifolia*, may or may not be this species as it is in fruit. Ecuadorian in distribution, a collection given by Herrera from southern Peru is referred here to *L. cuzcoensis*, which see. F.M. Neg. 38483.

Cajamarca: 3,000 meters, *Bonpland*, type. Ecuador.

Loasa rugosa Killip, Journ. Wash. Acad. Sci. 18: 91. 1928.

Perennial to 3.5 dm. high with a stout minutely pilose and densely red-setose stem nearly 1 cm. thick; basal leaves numerous, the cauline few; petioles 2–6 cm. long; blades reniform 2.5–3.5 cm. long, 4.7 cm. wide, shallowly and irregularly 5–9-lobed, deeply cordate, coriaceous, strongly rugose, nearly glabrous above, rufo-tomentose on nerves and veins beneath; peduncles stout, to 4 cm. long; calyx densely setose, the lobes to 2 cm. long, 1 cm. wide; petals 4 cm. long, 2.5 cm. wide, orange; scales petaloid, rectangular, 12 mm. long, erectly bilobed to below middle with 2 roundish appendages without near base; staminodia setaceous, 15 mm. long, densely pilose; stamens to 2.5 cm. long, the linear-oblong anthers to 2 mm. long; capsule 2–2.5 cm. long, 2 cm. wide, densely brown-setose.—Series *Grandiflorae;* differs from *L. peltata* Spruce in non-peltate thicker rugose leaves and much larger flowers. The pubescence was extremely stinging.

Junín: Tambo de Vaca, rocky uplands, 4,000 meters, *4350*, type.

Loasa solaria Macbr., spec. nov.

Herba annua; caulibus pedicellisque plus minusve setulosis; petiolis usque 10 mm. longis; foliis superioribus sessilibus oppositis oblongo-ovatis, acuminatis, fere aequaliter denticulatis, denticulis conspicue setosis, supra adpresse hispidulosis, subtus glabratis, 5–8 cm. longis, circa 3.5 cm. latis; pedicellis circa 1 cm. longis; petalis 12 mm. longis manifeste unguiculatis ad nervum medium setulosis, squamis dorso calcaribus vel alis nullis in parte superiore plica integro horizontali notatis, apice ipso calloso-incrassatis marginibus superne in dentes supra collum productis.

Referred at one time to *L. chenopodifolia* from which its opposite regularly toothed and setose leaves distinguish it. In its clawed

petals it approaches *L. Stuebeliana*. The collectors noted the flowers as bright yellow with scarlet centers.

Lima: Viso, wet shrubby slope, 3,000 meters, *577*, type.

Loasa solata Macbr., spec. nov.

Manifeste perennans; caulibus petiolisque breviter setulosis et plus minusve puberulis; petiolis oppositis 10–15 mm. longis; foliis fere oblongo-lanceolatis circa 7 cm. longis, 3 cm. latis obscure ubique 2–3-lobatis et crenulato-denticulatis, acuminatis supra minute strigillosis et sparse setulosis, subtus puberulis haud setulosis; floribus in apice caulis circa 7 in cincinnum dispositis; pedicellis ad 3.5 cm. longis, calycis lobis paullo vel haud setulosis, puberulis, 11 mm. longis, basi 4 mm. latis, acuminatis, tubus densissime bruneo-setosis; petalis 27 mm. longis vix 5 mm. latis, acutis, subplanis, apice paullo cucullatis, puberulis et sparse setosis; squamis papilloso-scabridis, 15 mm. longis, filis nullis, saccis 3 mm. longis, collo anguste oblongo 6 mm. longo, alis ventralibus supra collum 6 mm. productis.

With nearly the foliage of *L. calycina* Benth. and of *L. campaniflora* Tr. & Pl., 218, but the scales suggestive of (though different from) those of *L. acuminata* Wedd., 198, Ecuadorian and Colombian species. The data for the type sheet is lacking in Field Museum. Urban and Gilg gave the plant a new name but failed to publish it, perhaps deciding that it was referable to a species already described. Because of this uncertainty I have not taken up their name in this as in several other instances.

Peru: *Weberbauer 6408*, type, Field Museum.

Loasa Stuebeliana Urb. & Gilg, Monogr. Loas. 228. 1900.

Similar and closely allied to *L. leiolepis* but the lower petioles to 8 cm. long, the leaf blades well-decurrent and subentire or merely repand, esetose, or essentially, and at base with 2 reniform subamplexicaul stipules; petals 12–13 mm. long, broadly clawed; otherwise not marked.—F.M. Neg. 10219.

Amazonas: Chachapoyas, *Mathews*. Between Pacasmayo and Moyobamba at 2,000 meters, *Stuebel 52d*, type.

Loasa tingomariensis Macbr., spec. nov.

Herba an perennans(?) 0.5 m. alta; caulibus petiolisque sparse setulosis et minute strigillosis; petiolis alternis vel per paria approximatis ad 8 cm. longis; foliis viridibus suborbiculatis a basi (paullo cordatis) usque ad apicem leviter et inaequaliter lobulatis, lobulis utrinque circa 5 ovato-triangularibus, margine toto dense minuteque

denticulatis, supra mediocriter sed laxe setulosis subtus imprimis venis cum pilis brevibus setuloso-villosulis, membranaceis, viridibus, superioribus 15 cm. longis, 13 cm. latis; floribus in apice caulis vel in axillis foliorum superiorum circa 6 cincinnose dispositis; calycis lobis oblongo-ovatis, acutis fere 1 cm. longis, 6–7 mm. inferne latis, tubus circa 4 mm. longus superne circa 6 mm. latis; petalis planis vel subplanis oblongis acutis 20–22 mm. longis, 12 mm. latis, dorso haud setulosis leviter pilosis, intus glabris, membranaceis; squamis 8 mm. longis a dorso oblongis, collo obscure 3-crenulato-lobatis lobis recurvatis, lateralibus obscure papillosa emittentibus, marginibus superne sensim dilatatis supra collum valde aliformi-dilatatis 5–6 mm. latis; staminodiis 2 interioribus squamam superantibus; staminibus quam petala evidente brevioribus.

With the floral structure of the *Alatae*, the scales similar to those of *L. calycina*, 210, Ecuadorian, its leaves oblong-lanceolate, the leaves nearly those of *L. loxensis*, but broader, larger, the petals esetulose and the scales differently proportioned. *L. aurantiaca* Urb. & Gilg, 209, of Ecuador has narrower oblong-lanceolate petals, much longer scales. "Flowers orange-red to tomato red."

Huánuco: Sandy bank 10 km. south of Tingo Maria, 700 meters, *Stork & Horton 9512*, type. Junín: Yapas, *Killip & Smith 25469*.

Loasa triphylla Juss. Ann. Mus. Hist. Nat. Paris 5: 27. *pl. 5*. 1804; 235.

Variable annual but well-marked by virtue of its trifoliate lower leaves, the ovate leaflets always petiolulate and often with small leaflets or lobes between them; upper leaves lobed, the lobes ovate; petals white, 11–22 mm. long; scales obsoletely, bluntly and shortly bihorned at the base, banded purple and white, thickened above, verruculose beneath the emarginate apex; capsule to 2 cm. long.—Several names have been given to variations apparently of no taxonomic value. Often more or less setose and 1 meter high. *L. Humboldtiana* Urb. & Gilg, 240, Ecuadorian, has 3 enlarged nerves from the bicalcarate base instead of the 2 blunt horns that characterize *L. triphylla*. Type by *Jos. Jussieu*, "Peru."

Piura: Ayavaca, *Weberbauer 6424*.—Lambayeque: *Weberbauer 7096*.—Lima: Matucana, *Weberbauer 56*. Widely distributed in Warm America.

Loasa urens Jacq. Obs. 2: 15. *pl. 38*. 1767; 232. *L. ambrosiaefolia* Juss. Ann. Mus. Hist. Nat. Paris 5: 26. *pl. 4*. 1804.

Annual, the stems abundantly yellow-brown setose, and with oblong-pinnate or bipinnate leaves, well-petioled, the larger to 1 or 2 dm. long, pilose-puberulent especially beneath as well as setose on the nerves to glabrate; petals yellow, about 2 cm. long, narrowly clawed; calyx tube 4–8 mm. long, 4–6 mm. across, the lobes 7–10 mm. long, 3–4 mm. wide; scales 6–7 mm. long, the two calluses somewhat spreading and with 2–5 green or roseate folds above them; capsule 16–20 mm. long, 6–9 mm. thick. Leaf-pinnae more or less lobed, narrowly oblong; setae lustrous, many. Illustrated (flowers), Urban & Gilg, l.c. *pl. 5.*

Lima: Amancaes, *Weberbauer 1623;* 142, 143, 146; *Soukup 1306; Mathews 729.* Near Lima, *Raimondi; Castelnau; Abadia.* Chorillos, *5875.*—Arequipa: Pasco, Mejia and Cochendo (fide Bruns). Arequipa, *Raimondi.* Mollendo, *Weberbauer 1471; Johnston 3554.* "Inca."

Loasa Vargasii Macbr., spec. nov.

Herba annua 0.7 m. alta; caulibus petiolisque mediocriter strigillosis et setulosis; petiolis alternis circa 5 cm. longis; foliis late oblongo-ovatis basi circa 14 cm. longis, 12 cm. latis (superioribus paullo reductis?) fere truncatis subpinnatim lobatis, lobis acutis utrinque 2–3 inferioribus majoribus fere oblongis 3–4 cm. longis, 2.5–3 cm. latis, grosse vel repando-serratis, membranaceis, ubique scabro-hispidulis haud setulosis; floribus cernuis in apice caulis in pseudo-racemos usque ad 7 cm. longis dispositis; calycis lobis late ovatis acutis 9 mm. longis, 5 mm. latis; petalis 2.5 cm. longis, 7 mm. profundis margine setulosis in parte ⅓ inf. subito in unguiculum angustatis; squamis 8 mm. longis distincte supra basin in calcaria bina valde inflata protractis, filis nullis, supra incrassato notatis, apice ipso 4-crenato-calloso-incrassatis marginibus ipsis superne in dentes 1 mm. longos supra collum productis; staminodiis 2 squamam multo superantibus.

Flowers white, the glands patterned in red. Clearly allied to *L. Schlimiana* Planch. & Lind., 227, of Colombia but differs in foliage and scales.

Apurímac: Río Pachachaca, in gravelly rainy-green shrubland, 2,000 meters, *Stork, Horton & Vargas 10531,* type (University of California; scrap and photo, Field Museum).

Loasa Weberbaueri Urb. & Gilg, Bot. Jahrb. 45: 467. 1911.

Perennial herb to 2 meters high, the sublignescent stems densely setose; petioles 8–9 cm. long; leaves nearly suborbicular, cordate at

the subequal base, to 22 mm. long, nearly as broad, subpinnately lobed, the 5 ovate lobes about one-third as deep as the leaf-breadth, acute, unequally dentate, densely asperous above, ashy or brown-tomentulose beneath; flowers borne in twos, the very densely setose pedicels to 3.5 cm. long; calyx tube about 1 cm. long and broad, densely setose as the acute lobes dorsally, these to 2.5 cm. long, 1 cm. wide at base; petals plane, 4 cm. long or longer, 2.5 cm. wide, rounded at tip; scales about 2 cm. long.—Related to *L. acuminata* Wedd., 198, Ecuadorian, leaf lobes often 7, flowers smaller. F.M. Neg. 10225.

Cajamarca: In half shade by deciduous wood near Huambos, 3,100 meters, *Weberbauer 4183*, type.

6. CAJOPHORA Presl

Round-stemmed vines or annual or perennial herbs mostly abundantly provided with white stinging bristles, the leaves opposite, the flowers white, yellow or red, axillary or in pseudoracemes or panicles. Capsules rarely straight, always dehiscing from base upwards, remaining closed at the top. Otherwise like *Loasa*.—The similar genus *Blumenbachia* Schrad. may be found in southern Peru; it has a sharply 4-angled stem, the capsule wall thick instead of thin and different (unparted) placentae. A number of too closely related Bolivian forms, doubtfully distinct, have been included here, for they are to be expected in the same mountain range running into southern Peru. But in the known Peruvian species the seeds are merely foveolate-reticulate, never biwinged or irregularly angled. It seems necessary to follow the monographers and separate the species on habit but several forms, as remarked in the descriptions, are not clearly defined as to this as well as other characters. Some common names are "Ortiga macho," "ortiga colorada."

Stems never scandent, sometimes decumbent or weak.

Flowers 5-merous.

Stems weak, or if erect, the leaves rosulate below.

Leaves rosulate, on the short suberect stems crowded. *C. rosulata.*

Leaves not rosulate, on the elongate, weak, subdecumbent stems remote.

Scales with 3 threads; capsule (so far as known) straight.

Plants abundantly setose.....*C. coronata.*

Plants sparsely setose.....*C. andina.*

Scales without threads; capsules often somewhat contorted.

Scales about 5 mm. long, entire or subentire (cf. also *C. carduifolia*).

Leaves narrowly lanceolate; front edge of scales erect, thin, entire.....*C. cirsiifolia.*

Leaves ovate-oblong; front edge of scales slightly incurved and toothed.....*C. cymbifera.*

Scales about 10 mm. long, bidentate at tip..*C. pauciseta.*

Stems erect or suberect, the leaves never rosulate and the stems short.

Scales provided with 3 threads.....*C. andina.*

Scales without threads.

Stems 2.5 mm. thick; scales apically thickened; petals 14 mm. long.....*C. pachylepis.*

Stems stout; scales apically thin; petals 17–25 mm. long.

Petals 25 mm. long or longer.....*C. carduifolia.*

Petals 17–18 mm. long.....*C. cymbifera.*

Flowers 6–7-merous.

Flowers sessile or subsessile (always?).

Scales with a small appendage at the front.....*C. superba.*

Scales obsoletely 3-lobed at the front.....*C. heptamera.*

Flowers well-peduncled.

Scales neither dorsally keeled nor apically thickened.

C. chuquitensis.

Scales keeled and apically thicker.

Capsules subglobose; leaves with 2–3 pairs pinnae.

C. sphaerocarpa.

Capsules oblong-ovoid; pinnae often several.

Leaves slightly ovate; pedicels to 1 cm. long..*C. horrida.*

Leaves oblong-lanceolate; pedicels 3–7 cm. long.

C. Mandoniana.

Stems truly scandent (cf. *C. pachylepis*).

Petals 6.

Leaf lobes entire to dentate; flowers orange-red..*C. madrequisa.*

Leaf lobes pinnate-serrate; flowers scarlet.....*C. scarlatina.*

Petals 5.

Petals flat, ecalloused.
Petals 3–5 cm. long; scales with 3 threads....*C. canarinoides.*
Petals 2–2.5 cm. long; scales without threads....*C. Buraeavi.*
Petals evidently cymbiform.
Scales not calloused dorsally, sometimes apically.
Scales dorsally provided with 3 threads or 3 appendages.
Scales thin at front, not thickened.
Leaves ovate-oblong; petals about 1.5 cm. long.
C. contorta.
Leaves lanceolate; petals about 2 cm. long.
C. Pentlandii.
Scales thickened apically or squamose-appendaged.
Scales with 3 threads.
Capsules narrowly oblong, about 5 times longer than broad; leaves lanceolate.....*C. tenuis.*
Capsules oblong, 2–4 times longer than broad; leaves ovate.....*C. aequatoreana.*
Scales with 3 thickish appendages.
Petals entire.....*C. Smithii.*
Petals serrulate.....*C. serropetala.*
Scales without threads.
Interior staminodia without appendage.....*C. cinerea.*
Interior staminodia appendaged.
Seeds not winged; petals 2–3 cm. long.
Leaf lobes unequally serrate; petals to 2.5 cm. long.
C. sepiaria.
Leaf lobes equally dentate; petals about 3 cm. long.
C. macrantha.
Seeds winged; petals about 15 mm. long.
C. pterosperma.
Scales bicalloused below the neck at insertion of 3 threads.
C. stenocarpa.

Cajophora aequatoreana Urb. & Gilg, Monogr. Loas. 313. 1900.

Climbing, the terete stems to 2.5 mm. thick; petioles to 27 mm. long; leaves ovate, pinnately lobed about half the breadth or nearly pinnate, the ovate divisions or lobes repand-dentate or serrate,

lightly asperous above, pilose beneath, slightly setose both sides, 5–8 cm. long, about 5 cm. wide; calyx tube 7–8 mm. long, 5–6 mm. across, the lobes about 1 cm. long, regularly serrate; petals about 16 mm. long, 8–9 mm. wide, deeply cymbiform-concave; scales 4–5 mm. long, ecarinate but with 3 longer threads and evidently thickened marginally; capsules 2.5 cm. long or a little longer, 2–3 times longer than broad.—Illustrated, Bot. Mag. *pl. 6134* as *B. contorta*. *C. Kuntzei* Urb. & Gilg, 314, Bolivian, has leaves half as wide, capsules only 2 cm. long. F.M. Neg. 24164.

Huánuco: Pacasmayo to Moyobamba near Cumallca, 3,600 meters, *Stuebel 35a*.—Ancash: *Raimondi*. Huancabamba, *Raimondi*. Ecuador.

Cajophora andina Urb. & Gilg, Monogr. Loas. 287. 1900.

Stems erect(?), or ascending from a fusiform root; flowering stems several to many, a dm. long or longer, densely puberulent-pilose but esetose; leaves opposite, oblong, to 9 cm. long, nearly 3 cm. wide, pinnate, the pinnae about 6 pairs, oblong, acute, indistinctly dentate, densely tomentulose beneath, not at all setose but with a few setae above; flowers terminal, solitary; calyx tube 6 mm. long, the linear subentire lobes 8–9 mm. long, setae lacking; petals to 2 cm. long, not more, 8 mm. wide, deeply cymbiform; scales about 4 mm. long, dorsally 3-keeled and with 3 threads; stamens about 100; capsule unknown.—To be expected on extension of the Bolivian ranges. Described as "erect, rigid" but material seen and referred here by Urban & Gilg has weak ascending stems. F.M. Neg. 24165.

Peru (probably). Bolivia.

Cajophora Buraeavi Urb. & Gilg, Mem. Torrey Club 3, pt. 3: 37. 1893; 328.

Slender vine, the stems about 2 mm. thick; petioles 1–3 cm. long; leaves ovate, acuminate, deeply serrate or subpinnate, the lobes sharply serrate, minutely asperulous above, pilose-tomentulose beneath and there with a few scattered setae, if any, to 11 cm. long, and about half as wide; calyx tube 8 mm. long, the regularly dentate lanceolate lobes little longer; petals 22 mm. long, 13 mm. wide, acute, little concave; scales 6 mm. long, the dorsal nerves not prominent, threads lacking, the lobes rounded and very densely papillose.

Junín: Cerro de Pasco (*Mathews*).—Huánuco: 3,600 meters, Cumallca, *Stuebel 35a*.—Puno: Carabayo, *Weddell 4735*. Bolivia.

Cajophora canarinoides (Lenné & C. Koch) Urb. & Gilg, in Pflanzenfam. 3, 6a: 119. 1894; 326. *Illairea canarinoides* Lenné & C. Koch, Verh. Ver. Bef. Gartenbaus, N. R. 1: 397. 1853.

Closely allied to *C. Buraeavi* but leaves sagittate from a truncate or emarginate base, long-acuminate, sometimes pinnate at base; calyx tube 5–9 mm. long, the ovate lobes equally or unequally dentate, 8–15 mm. long; petals 3–5 cm. long, 10–18 mm. wide, variable in form: scales with 3 threads as long or a little longer.—Illustrated, Bot. Mag. 83: *pl. 5022.*

Puno: Cuyocuyo, Sandía, 3,180 meters, *Weberbauer 862;* 184. Bolivia.

Cajophora carduifolia Presl, Rel. Haenk. 2: 42. 1831; 290.

Stems "ascending" or perhaps erect, stiff, 3–4 mm. thick below, more or less densely tomentose with some setae intermixed especially above, to 2.5 dm. high or higher; petioles to 2.5 cm. long; leaves ovate to broadly ovate, to 11 cm. long, 4.5 cm. wide, pinnate or nearly, the ovate always acute lobes distinctly but not deeply serrate, abundantly setose above, little beneath but densely tomentose; flowers solitary, terminal; calyx lobes dentate, 12–13 mm. long; petals yellow, 26–28 mm. long, 14–15 mm. wide, deeply cymbiform-cucullate; scales 6–7 mm. long, deeply saccate-convex, the back without keel, no threads, the margin always evidently thinner apically, not notched before. The original description calls for a weak-stemmed plant and indeed here Ball referred material from Chicla that was sprawling without support; cf. *C. contorta.*

Huánuco: (*Haenke*).

Cajophora chuquitensis (Meyen) Urb. & Gilg, l.c. 301. *Loasa chuquitensis* Meyen, Reise 1: 483. 1834; Walp., Nov. Act. Acad. Leop.-Carol. 19: Suppl. 1: 339. 1843.

Stems "stiffly erect" or ascending, 2.5–3 mm. thick, tomentose and laxly setose; petioles about 1 cm. long; leaves lanceolate, rarely somewhat ovate, to 10 cm. long, 22 mm. wide, densely long-setose above, usually only tomentose beneath or setae very few, pinnate, or pinnately divided, the divisions subpinnately dentate; flowers 2–3, 7-merous, erect; pedicels to 2.5 cm. long, not lengthening in fruit; calyx lobes entire or nearly, linear-lanceolate, about 10 mm. long; petals 13–14 mm. long, 7–8 mm. wide, deeply cymbiform-cucullate; scales about 5 mm. long, ecarinate, apically thin, the dorsal threads much longer; placentae plane, dichotomous; capsule slightly longer than 2 cm., 8–9 mm. across.—F.M. Neg. 10145.

Puno: Lake Titicaca, *Meyen*, type. San Antonio, *Lechler.*—Ayacucho: One day from Ayacucho, 3,500 meters, *Weberbauer 5486.*

Cajophora cinerea Urb. & Gilg, l.c. 321.

A vine, the stems to 3 mm. thick, the petioles 8 mm. long, the leaves oblong or ovate-oblong, regularly serrate-dentate, stoutly setose above, tomentose beneath; calyx tube 6–7 mm. long, 3–4 mm. across; the lobes as long, deeply dentate; petals nearly or quite 15 mm. long, only slightly concave; scales about 4.5 mm. long, ecarinate, efilamentose, manifestly thickened above, not winged below but edge a little inflexed; inner staminodes not appendaged dorsally above the base.—Type without locality, but possibly from northern Bolivia and therefore to be expected in southern Peru. F.M. Neg. 32587.

Peru (possibly). Bolivia.

Cajophora cirsiifolia Presl, Rel. Haenk, 2: 42. *pl. 56.* 1831; 280. *C. Lechleri* Urb. & Gilg, Pflanzenfam. 3, 6a: 119. 1894, fide Urb. & Gilg.

Stems to several dm. long, weak and decumbent-ascending, about 3 mm. thick, the lowest leaves rosulate; petioles to 7.5 cm. long; leaves oblong-lanceolate, pinnate, to nearly 2 dm. long, 2.5–3.5 cm. wide, the usually broadly ovate pinnae deeply dentate or lobulate, tomentulose beneath and setose especially above and marginally, the white bristles scattered but prominent as also on the stems and petioles; flowers pseudolateral; calyx tube 5–6 mm. long, 3–4 mm. across, the narrow lobes 8–9 mm. long, obsoletely and remotely dentate; petals about 16 mm. long, 11 mm. wide, saccate-cymbiform; scales 4.5–5 mm. long, efilamentose, entire at front and neither thickened nor winged; capsule subglobose to 22 mm. long, somewhat spiraled below, or scarcely.—Flowers brick-red (Mexia). F.M. Neg. 24167 (*Lechleri*).

Huánuco(?): (*Haenke*, type).—Puno: Near Acanzaro and San Antonio, *Lechler 1768* (*C. Lechleri*). Pucará, 3,700 meters, *Weberbauer 401;* 185. Sandía, 4,400 meters, *Weberbauer 962;* 218, 219, 220. Crevices in crags, Granja Salcedo, 3,835 meters, *Mexia 7778* (det. Johnst.); also *Soukup 9*, distr. as *C. horrida.* Araranca, wide clumps on rocky siliceous slopes, 4,100 meters, *Pennell 3458* (det. Killip). Bolivia. "Llungo-llungo."

Cajophora contorta Presl, Rel. Haenk. 2: 42. 1831; 306. *C. Preslii* Urb. & Gilg, l.c. 306. *Blumenbachia grandiflora* R. & P. ex G. Don, Gard. Dict. 3: 62. 1834, probably.

Stems only about 2 mm. thick, scandent; petioles to 12 mm. long; leaves lanceolate, to 6 cm. long, 4.5 cm. wide with as many as 12 pairs oblong to ovate pinnae, these usually regularly serrate-dentate, little setose, not at all beneath where tomentulose; calyx tube 7–8 mm. long, 4–5 mm. across, the ovate deeply dentate lobes nearly as long; petals 15 mm. long or scarcely longer (to 20 mm.), about half as wide, deeply concave; scales 5 mm. long, only 2 mm. wide, with 3 nearly filiform and greatly elongate threads, medially keeled, the margin not thickened nor winged below nor involute; filaments about 60; capsules unknown.—Ball, Journ. Linn. Soc. 22: 39. 1885, referred his material to *C. carduifolia* with the remark: the slender but rather stiff stems twine, although in this district the plant ordinarily grows in positions where it can obtain no support. F.M. Neg. 10161.

Lima: Chicla, 3,720 meters, *Weberbauer 56; (Ball?)*. Puente Infernillo *(Ward,* fide Ball).—Huánuco(?): Andean valleys, *Haenke,* type.—Cuzco: *Herrera 523.* Urubamba, *Herrera 686; 3412; Vargas 330.* Prov. Calca, *Vargas 329.*—Arequipa: *Isern 2019.* Bolivia. "Huasjia-quisa," "quisa."

Cajophora coronata H. & A. in Hook. Bot. Misc. 3: 327. 1833; 278.

Closely allied to and in habit and pubescence resembling *C. cirsiifolia* but the leaves more ovate, to 7 cm. wide, the calyx tube 9–25 mm. long, about 7 mm. across, the lobes pinnate, the petals 2–5.5 cm. long, 17–30 mm. wide and, more particularly, the scales provided with 3 filaments and 3-lobed before and the capsule always straight, to 4 cm. long, 2 cm. thick.—Highly variable in foliage and flowers, nevertheless well-marked by the scales and capsules. Localities not surely Peruvian. There is a fine habitat photograph in Ostenia opposite page 240. 1933. Illustrated, Bot. Mag. *pl. 8125.*

Moquehua(?): Tacora-Sajama, *Stuebel 102.*—Cuzco(?): *Gay.* Bolivia; Argentina; Chile.

Cajophora cymbifera Urb. & Gilg, l.c. 281.

Stems "stiffly erect," but rather suberect or even scandent, about 3 mm. thick; petioles to 4.5 cm. long; leaves ovate or ovate-oblong, to 12 cm. long and half as wide, pinnatifid or pinnately parted, the ovate divisions usually 5–7 on each side, sparsely serrate, the teeth often minutely dentate, densely setose above, tomentose beneath and setose on the nerves; flowers in few-flowered cymes, the pedicels 5–6 cm. long; calyx tube 7–8 mm. long, half as wide, the lobes about

15 mm. long, remotely but deeply dentate; petals 17–18 mm. long, deeply cymbiform, narrowed to base, a little above it 7–8 mm. wide; scales 4–5 mm. long and nearly as broad, ecarinate, efilamentose and thin apically, the interior staminodes bearing above the base a cymbiform appendage 5–6 mm. long.—A photo by Killip of type shows a weak-stemmed plant, perhaps even scandent. Although allied by Urban and Gilg to *C. cirsiifolia* in their key, 271, it is described as erect and its alliance seems to be with *C. carduifolia*, the staminodia with shorter appendage. The locality is given as Colombia but the probability is that the plant was found in central Peru. Illustrated (flower parts), Urb. & Gilg, l.c. *pl. 7.*

Peru(?): Without locality (*Lobb*, type). Ecuador.

Cajophora heptamera (Wedd.) Urb. & Gilg, Pflanzenfam. 3, 6a: 119. 1894; 295. *Loasa heptamera* Wedd. Chlor. And. 2: 218. 1857.

Similar to *C. superba;* lower pinnae of the leaves often subpinnately lobed; calyx lobes 16 mm. long, 6–7 mm. wide at base, more or less deeply sinuately lobed; scales obsoletely 3-lobed before, the middle lobe emarginate, the lower margin broadly incurved.

Peru (probably). Bolivia.

Cajophora horrida (Britton) Urb. & Gilg, Mem. Torrey Club 3, pt. 3: 36. 1893; 297. *Loasa horrida* Britton, Bull. Torrey Club 17: 281. 1890.

A coarse, strict, erect, and abundantly white-bristly-pubescent plant with pinnate or subpinnate leaves, their divisions even to 10 pairs and deeply dentate with acute, entire teeth; leaves ovate, often broadly so, to 1.5 dm. long, usually at least a third as wide, subtomentose beneath; flowers solitary, terminal, the pedicels elongating to as much as 4 cm.; calyx tube 8–9 mm. long, 7–8 mm. across, densely setose, the ovate-lanceolate, regularly serrate dentate lobes about 14 mm. long; petals 26 mm. long, 12–14 mm. wide, deeply cymbiform-cucullate, broadly winged below, glabrous within; scales about 7 mm. long, 4 mm. wide, well exceeded by the dorsal threads, prominently 3-keeled above the base, trilobed before, the upper margin thickened, and broadly winged below; inner staminodia about 13 mm. long, dorsally appendaged; placentae 4, dichotomous, plane; capsule 2.5 cm. long, 2 cm. thick, densely setose on the 12–14 prominent nerves; seeds oblong, 1.1 mm. long.—As known from northern Bolivia it is to be expected in southern Peru. F.M. Neg. 38493.

Arequipa: Sumbay, 4,200 meters, *Karl P. Schmidt* (det. Standl.). Bolivia.

Cajophora macrantha Killip, Journ. Wash. Acad. Sci. 18: 94. 1928.

Scandent terete stem 2.5 mm. thick, sparingly setose with slender retrorse bristles; leaves opposite, on petioles 1–2.5 cm. long, the lanceolate blades 5–8 cm. long, 3–5 cm. wide, acuminate, cordate, pinnatifid about half, the ovate-lanceolate segments regularly dentate, setulose above, appressed-hirsutulous on nerves and veins beneath; flowers 5-merous, subterminal, the peduncles about 5 cm. long; ovary 1 cm. long, 12 mm. wide at throat, densely setose, the linear-oblong lobes 10–12 mm. long, irregularly toothed; petals white, about 3 cm. long and 22 mm. wide, slightly narrowed at base; scales deeply concave, 9–10 mm. long, nearly as wide, papillose, green, truncate, dorsal thread none; staminodia linear, about 10 mm. long, the slightly longer stamens with linear-oblong anthers 1.5 mm. long.—Section *Dolichocarpae;* with the scales of *C. sepiaria* but leaves less deeply divided, flowers larger and anthers longer and narrower (Killip), but it seems to be very near.

Junín: Tambo de Vaca, 3,600 meters, *4468*, type.

Cajophora madrequisa Killip, Journ. Wash. Acad. Sci. 18: 94. 1928.

Herbaceous vine, the sparingly appressed setose terete stem 1.5–2 cm. thick; petioles 1–2 cm. long; leaves opposite, lanceolate-oblong, 3–6 cm. long, 1.5–3 cm. wide, subtruncate or cordulate, at base below the acuminate apex pinnately lobed, the lobes 5–6 each side, even suborbicular, dentate, finely appressed-hispidulous above, rufo-tomentose beneath; flowers solitary or in 2–3-flowered cymes, the densely retrorse-hirtellous peduncles to 8 cm. long; calyx densely setose, about 1 cm. wide at throat, the lobes to 2 cm. long, 3 mm. wide, subulate-dentate; petals 6, scarcely narrowed at base, tomentulous-hirtellous without, apparently light yellow, 17–19 mm. long, 10–12 mm. wide; scales convex, 5–6 mm. long, 3–4 mm. wide, shallowly bidentate, with 3 slender threads 1.5 mm. long; staminodia 12 mm. long, 2 mm. wide at base with a dorsal roundish appendage near base; stamens about 100, ovate-orbicular anthers 1.2 mm. long; capsule clavate, 5 cm. long, 12 mm. wide at top, tapering to short stipe, spiraled to right. Apparently nearest the much more densely setose *C. scarlatina* with more deeply divided leaves, larger scarlet flowers.

Cuzco: Lucumayo Valley, 1,800–3,600 meters, (*Cook & Gilbert 294*, type). Cerro de Cusilluyoc, *Pennell 13829* (det. Killip). "Madrequisa," "marrequisca."

Cajophora Mandoniana Urb. & Gilg, Monogr. Loas. 299. 1900.

Similar to *C. horrida* but the oblong-lanceolate leaves with fewer (to 6) pinnae, these sparsely and coarsely toothed, the stems usually 2-flowered, the pedicels 3–7 cm. long, but little if at all lengthening in fruit; petals not recurved or winged; scales 5 mm. long, and nearly as broad, the middle keel little marked; capsules about 3 cm. long, 16 mm. thick; otherwise scarcely differs and, indeed, it may be remarked here that more collections are needed to prove the value of these characters as indicating species, in this case as well as in several other closely related forms as indicated in the key. As the type is from northern Bolivia, its occurrence in Peru is probable. Leaves sparsely setose both sides but otherwise nearly glabrate, dark green above.—F.M. Neg. 24168.

Peru (probably). Bolivia.

Cajophora pachylepis Urb. & Gilg, Monogr. Loas. 288. 1900.

Allied to and with many of the characters of *C. andina* except that the stems are densely setose especially above, as well as the leaves to some extent on both sides; leaves ovate or the upper lanceolate, to 7 cm. long, 2.2 cm. wide the pinnae ovate; calyx tube about 8 mm. long, the lobes pubescent as the leaves; petals about 14 mm. long, 9 mm. wide; scales 4.5 mm. wide and long, with a dorsal keel but no threads; stamens 50–60; capsules to 3.3 cm. long, 17 mm. thick, scabrous; seeds 0.8 mm. long.—The scant type has a facies that suggests that the plant may be scandent. F.M. Neg. 38495.

Peru: (Presumably) quebrada de Bilcacota, *Castelnau*. Without locality, *Mathews*.

Cajophora pauciseta Killip, Journ. Wash. Acad. Sci. 18: 93. 1928.

Lax, apparently decumbent herb 2 dm. long or longer, the slender stem finely pilose and with many stiffer hairs and a few slender white setae intermixed; leaves opposite; petioles to 5 cm. long, about half as long as the lanceolate-ovate blade, this 2–5 cm. wide, deeply and regularly pinnate-lobed, the 6 pairs of lobes dentate, thin, densely covered with stiff, appressed, hyaline hairs, glabrous on nerves, densely white-tomentose beneath; peduncles subterminal, erect, 4–5 cm. long; calyx densely yellow-brown setose, the lanceolate

lobes 1 cm. long, 2 mm. wide, remotely denticulate; petals 5, 15–18 mm. long, 10–13 mm. wide, clawed; scales sac-like, 10–12 mm. long, 7 mm. wide, the 3 nerves not terminating in threads, bidentate, the teeth 2 mm. long; staminodia linear, marginally papillose, 12 mm. long; anthers broadly ovate.—Scales of *C. cymbifera* but not with a triangular lobe.

Junín: La Oroya, 3,300 meters (*Kalenborn 48*, type).

Cajophora Pentlandii (Paxt.) G. Don ex Loud. Encycl. Pl. Suppl. 2: 1438. 1855; 307. *Loasa Pentlandii* Paxt. Mag. Bot. 9: 7. 1842.

Resembling and allied to *C. contorta* but stems to 3 mm. thick; petioles to 6 cm. long, leaves to 19 cm. long, 4.7 cm. wide, calyx lobes linear-lanceolate, subentire, to 9 mm. long, petals 21–24 mm. long, nearly 2 cm. wide, nearly plane; scales 6 mm. long or longer, 4 mm. wide, with 2 threads, long-beaked before and somewhat winged below; stamens 80–100; otherwise similar but capsules unknown.—Perhaps the Cuzco specimen cited under *C. contorta* belongs here. The type from Peruvian seeds (Loudon) and cultivated 1840–46. Employed as an infusion in the treatment of sciatica (Herrera). Illustrated, Hook. Bot. Mag. 70: *pl. 4095*. F.M. Neg. 10158.

Cuzco: Saxaihuamán, *Herrera 1268*. Huasco, *Herrera 3026*.—Puno: *Raimondi*. "Huajia-quisa," "huascjia-quisa," "orcco-quisa," "ckora-quisa."

Cajophora pterosperma (R. & P.) Urb. & Gilg, Monogr. Loas. 324. 1900. *Blumenbachia pterosperma* G. Don, Gard. Dict. 3: 62. 1834. *Loasa pterosperma* R. & P. in herb.

A slender vine, the stems even below less than 2 mm. thick; lower leaves broadly ovate, gradually upwards narrowing to oblong-lanceolate above, pinnate or pinnately parted, the divisions ovate and more or less deeply sinuately incised, above asperous but with few setae and none on the pilose lower surface, to 14 cm. long, half as wide, the petioles to 2 cm. long; flowers 5-merous, 1–4, on pedicels to 7 cm. long; calyx tube about 7 mm. long, 4 mm. across, the somewhat longer linear-lanceolate lobes distinctly and regularly dentate; petals to 18 mm. long, 12–14 mm. wide, deeply cymbiform and broadly winged below; scales 7–8 mm. long, 5–6 mm. wide, ecarinate, efilamentose, distinctly tricuspidate with subequal acute teeth; staminodia appendaged; stamens 50 or so; capsules 26–29 mm. long, nearly or quite 10 mm. thick, often contorted below, the placentae 3;

seeds oval-orbicular, broadly winged.—Perhaps Ecuadorian. F.M. Neg. 10162.

Peru: Without locality, *Ruiz & Pavón.*

Cajophora rosulata (Wedd.) Urb. & Gilg, Monogr. Loas. 276. 1900. *Loasa rosulata* Wedd. Chlor. And. 2: 219. 1857.

Perennial with densely crowded leaves; flowering stems apparently erect or ascending, only 1 mm. thick; petioles to 7 mm. long; leaves about oblong, pinnate with regularly dentate ovate pinnae, 3.5 cm. long, 15–18 mm. wide, sparsely puberulent above, densely so beneath, esetose or nearly; flowers 5-merous, solitary, erect, reddish-orange; calyx tube about 3 mm. long and nearly as much across, the narrow lobes twice as long and deeply but remotely and subciliately dentate; petals 14 mm. long or slightly shorter, about 4 mm. wide, cymbiform-cucullate but not winged; scales deeply saccate-convex, 3–3.5 mm. long, 2–2.5 mm. broad, glabrous, ecarinate, efilamentose, obtuse before, neither incised nor thickened; stamens 30–40; placentae 3; capsules unknown to the authors.—Flowers fiery red (Weberbauer), cadmium-orange (Pennell). F.M. Neg. 38497.

Arequipa: Nevado de Chachani, *Pennell 13320.* Cotahuasi, 45 meters, *Weberbauer 6881.*—Tacna: Arica, 4,000 meters, *Woitschach.* —Moquehua: Tacora, *Weddell,* type.

Cajophora scarlatina Urb. & Gilg, Bot. Jahrb. 45: 470. 1911.

Stems scandent, with long internodes, densely pilose, sparsely setose; petioles 7–8 cm. long; leaves oblong or lanceolate, to 16 cm. long, 7 cm. wide, pinnate, the pinnae extending nearly to the midrib, acute, shortly gray-pilose on both sides with a few setae intermixed only above; flowers scarlet, apparently 6-merous, solitary, the pedicels 2–4 cm. long; calyx tube about 1 cm. long, nearly as wide, the regularly dentate lobes loosely setose, 15 mm. long, a third as wide; petals about 2.5 cm. long, nearly as wide, deeply cymbiform, laxly setose.—Allied to *C. mollis* Urb. & Gilg, 291, Argentinian. F.M. Neg. 10167.

Puno: Cuyocuyo, in rocks, 3,400 meters, *Weberbauer 392,* type.— Arequipa: Nevado de Chachani, *Pennell 13262* (det. Killip).

Cajophora sepiaria (R. & P.) Macbr., comb. nov. *Loasa sepiaria* R. & P. in herb. *Blumenbachia sepiaria* R. & P. ex G. Don, Gard. Dict. 3: 62. 1834. *L. contorta* Desr. in Lam. Encycl. 3: 579. 1791. *C. contorta* Urb. & Gilg, 323, not Presl, as to the plant described.

Scandent stems about 2.5 mm. thick below, where densely leafy; petioles to 4 cm. long; leaves oblong-ovate, often broadly so, pinnate or pinnately parted, the oblong or ovate divisions to 7 pairs, unequally and more or less bluntly serrate, the serrations too sometimes denticulate, sparsely asperous-setulose above, tomentulose beneath; flowers 2–4, remote, orange, usually pendulous; pedicels 4.5–6 cm. long; calyx tube 7–8 mm. long, 4–5 mm. across, the linear lobes about 12 mm. long, remotely subulate-dentate; petals to 24 mm. long, scarcely wider than 15 mm., nearly plane, not winged; scales 8–9 mm. long, half as wide, efilamentose, ecarinate, quadrangularly excised in front, the lobes forming a rounded tip, below narrowly winged and long-ciliate; staminodia conspicuously appendaged; stamens 60–70; capsule turbinate-oblong, scabrous and setose, 2 cm. long, 8 mm. thick; seeds oblong, nervose.—Leaves nearly esetulose or with a few setae above; flowers yellow-green to orange. Illustrated, Lam. Ill. *pl. 426;* Juss. Ann. Mus. Hist. Nat. Paris 5: 25. *pl. 3.* F.M. Negs. 10147; 29438.

Lima: Cheuchín, *Ruiz & Pavón,* type; *Jos. Jussieu.* Río Blanco, 4,000 meters, prostrate on stony talus or supported in low shrubs, *680* (det. Killip). Canta, *Pennell 14616.* Obrajillo, *Née.*—Cajamarca: Ocros, *Weberbauer 2684.*—Tacna: *Weddell.*

Cajophora serropetala Macbr., spec. nov.

Planta scandens; caulibus subadpresse sparseque setulosis haud vel paullo villosulis petiolis circa 2.5 cm. longis; foliis ovatis circa 8 cm. longis, solum inferne pinnatipartitis supra pinnatilobatis pinnis inferioribus utrinque 1–2, profunde et irregulariter lobatis, supra dissite setulosis et mediocriter scabridis, subtus minutissime villosulis et ad nervos setulosis; pedunculis circa 1 cm. longis; floribus 5-meris; calycis segmentis 1 (1.5) mm. latis, 1 cm. longis parce denticulatis; petalis paullo cymbiformis, 2 cm. longis, circa 1 cm. latis, margine infra medium plus minusve serratis; indumento ut in caule; squamis 5 mm. longis, oblongis, apice incrassatis, bicornis, 3-nerviis dorso prope medium appendicis 3 oblongis acutis ad basin attenuatis, usque 3.5 mm. longis, 1 mm. latis; staminodia ad quamque squamam 2 papillosa apice longe filiformi-attenuata circa 5 mm. longa; stamina circa 60; capsula immatura dense setulosa paullo spiraliter nervosa, obconica nutante, 1.5 cm. longa, superne 7 mm. lata.

An uncommon creeper around a dwarf shrub, the flowers delicately transparent with a tint of pronounced green (Woytkowski). Apparently nearly *C. Smithii* but remarkable in the serrulate petals;

the scale appendages in the dried specimen are conspicuous and bright white except for the yellow narrowed lower half.

Junín: Huassahuassi, *Woytkowski 39*, type.

Cajophora Smithii Killip, Journ. Wash. Acad. Sci. 24: 51. 1934.

Slightly puberulent and sparsely setulose vine; petioles 2–3.5 cm. long; leaves lanceolate, 5–7 cm. long, 3.5–5 cm. wide, pinnately lobed above the middle, divided below the middle, the segments dentate, appressed-scabrous above, puberulent beneath; peduncles 1 cm. long; calyx about 7 mm. long, 5 mm. across, densely setose, the linear lobes to 1 cm. long, to 1 mm. wide; petals cymbiform, 1 cm. long, 7 mm. wide, villosulous and sparingly and weakly setulose without, orange; scales green, saccate-convex, oblong, 4 mm. long, 1.5 mm. wide, strongly thickened at apex, 2-horned, 3-nerved, bearing dorsally near middle 3 oblanceolate acute white appendages about 2 mm. long, 0.8 mm. wide; staminodia falciform, filiform at tip, 5 mm. long; stamens about 80.—Compared by the author with *C. clavata* of Argentina with different scales.

Junín: Carpapata above Huacapistana, 3,000 meters (*Killip & Smith 24419*).

Cajophora sphaerocarpa Urb. & Gilg, Monogr. Loas. 296. 1900.

Similar to *C. horrida* but the upper leaves at least with only 2–3 pairs of leaflets; flowers several, the pedicels to 3 cm. long, elongating to 7 cm. in fruit; petals about 32 mm. long; capsule 24 mm. long and nearly as thick, the seeds 1.2–1.3 mm. long; otherwise like the allied species with which it was found in northern Bolivia, so to be expected in adjacent Peru. F.M. Neg. 38498.

Peru (probably). Bolivia.

Cajophora stenocarpa Urb. & Gilg, Monogr. Loas. 330. 1900.

Scandent species marked by the presence of 2 calluses on the back of the floral scales below the neck; petioles to 7 mm. long; leaves oblong or oval-oblong, to 2.5 cm. long, 1.5 cm. wide, pinnately parted, the uppermost divisions entire, the lower even sometimes pinnate, sparsely asperous above, merely tomentulose beneath and without setae; flowers 5-merous, about 3, remote, the pedicels to 3 cm. long, scarcely longer in fruit; calyx tube 5–6 mm. long, about 3 mm. across, the narrow entire lobes nearly as long; petals little if at all longer than 1.5 cm., cymbiform, shortly clawed; scales 7 mm. long, 2–2.5 mm. wide, recurved at the calloused apex; capsule narrow,

about 27 mm. long, 6–7 mm. thick, sparsely setose, scarcely or not contorted, the strongly angled seeds about 1.2 mm. broad.—Illustrated, Urb. & Gilg, l.c. *pl. 8* (flower parts).

Arequipa: 4,000 meters, *Hopp.* Without locality, *Maclean*, type.

Cajophora superba R. A. Phil. Anal. Mus. Nac. Chile, Bot. 1891: 23. 1891; 292. *Loasa heptamera* Wedd., var. *chelidonifolia* Wedd. Chlor. And. 2: 218. 1857.

Stout, erect, with lanceolate pinnate leaves that are white-setose above and subtomentose beneath with a few setae on the nerves; pinnae about oblong, with entire rounded teeth; petioles to 4.5 cm. long, the blades to 18 cm. long, 5.5 cm. wide; flowers mostly solitary the pedicel scarcely 2 mm. long; calyx tube about 11 mm. long, nearly as wide above, the twice as long lobes obsoletely dentate; petals 27 mm. long, 12 mm. wide, deeply cymbiform, not winged; scales 8–9 mm. long, 6 mm. wide, with a triangular appendage in front and lateral wings; stamens very many; capsule 23 mm. long, nearly as thick.—The following collection with flesh-colored flowers not surely correctly named. Illustrated, Bot. Mag. *pl. 6143*.

Moquehua: Cuajones Mine, Torata, 3,200 meters, *Weberbauer 7468* (det. Killip). Bolivia; Chile.

Cajophora tenuis Killip, Journ. Wash. Acad. Sci. 18: 93. 1928.

Slender, scandent herb, the sparsely pilose stem less than 1 mm. thick; petioles 2–3.5 cm. long; leaves opposite, lanceolate, cordulate, acute, 3–5 cm. long, 1.5–3 cm. wide, pinnately 6-lobed, the ovate lobes sinuate-denticulate, thin, densely appressed-pilose above, hirsutulous beneath; flowers solitary, the very slender peduncles to 5 cm. long, toward tip with many short retrorse bristles; calyx densely yellowish setose, the lobes narrowly linear, entire, 6–7 mm. long; petals 16–18 mm. long, 10–12 mm. wide, narrowed at base, finely hirsutulous, lightly setose, pale cream-colored; scales saccate-convex, 8 mm. long, 3 mm. wide, puberulous, shallowly bidentate, with 3 threads 3 mm. long; staminodia about 10 mm. long, thickened above; capsule 2 cm. long, 4 mm. wide (young).—*Dolichocarpae*, and, by shape of capsules, near the different Argentinian *C. cernua*.

Huánuco: María del Valle, 2,200 meters, *3560*, type. "Ortiga."

BEGONIACEAE Lindl.

By Lyman B. Smith and Bernice G. Schubert

References: A. DeCandolle in DC. Prodr. 15, pt. 1: 266. 1864; Irmscher in Engl. & Prantl, Pflanzenfam. ed. 2. 21: 548. 1925.

Characters largely those of *Begonia*, the one large genus, but the tepals may be joined in either or both sexes, while the ovary is sometimes half superior.—Five genera, all but *Begonia* of very restricted range.

1. BEGONIA L.

Herbs, erect or scandent shrubs, or rarely small trees, caulescent or stemless. Base fibrous or tuberous. Leaves alternate, simple in the Peruvian species, more or less asymmetric, stipules free, deciduous. Inflorescence usually cymose, its bracts mostly deciduous. Flowers monoecious. Perianth not clearly divided into 2 series, its tepals free, 2–11 in the Peruvian species. Staminate tepals usually 2 or 4, when 4 the outer pair often distinctly larger. Stamens many or rarely few, free or more or less united in a column, anthers various in form, generally with a lateral dehiscence. Rudiment of the ovary lacking in the staminate flowers. Pistillate tepals 2 or 5 or rarely more. Ovary wholly inferior, usually 3-celled. Placentae usually axillary and bilamellate. Styles various but most often 2-branched with the stigmatic papillae forming a spiral down the branches and joined between them. Fruit usually an appendaged capsule.

More than 700 species in the tropical and subtropical zones of both hemispheres.

Weak, slender, branching annuals; placentae simple and 2-parted in a single ovary; staminate tepals 2 or 4; pistillate tepals 5; neither over 4 mm. long.

Capsule-wings unequal, subdeltoid; stipules serrate; leaves mostly oblique or transverse, pilose above.

Stem glabrous; capsule 6–8 mm. long.....*B. humilis.*

Stem villous; capsule 10–14 mm. long.....*B. hirtella.*

Capsule-wings subequal, semicircular; leaves mostly straight, glabrous or subglabrous.....*B. Spruceana.*

Perennial herbs or shrubs; placentae consistently simple or divided in each species.

Placentae simple; leaves straight; plants caulescent; staminate tepals 4; pistillate tepals 5.

Leaves broadly ovate to palmate; inflorescence a many-flowered diffuse cyme.

Shrubby; leaves palmate, lobed, 2–6 dm. wide; capsule-wings subequal, cuneate at base.....*B. parviflora.*

Scandent; leaves broadly ovate; capsule-wings very unequal. *B. glabra.*

Leaves elliptic or oblong; inflorescence racemose or of 1–2 flowers.

Inflorescences terminal, laxly racemose; filaments free.

B. buddleiaefolia.

Inflorescences axillary, 1–2-flowered; filaments connate near base. . . . . *B. Poeppigiana.*

Placentae bilamellate or further divided.

Filaments united into an elongate column; tepals narrow, acute, the staminate 4, the pistillate 6. . . . . *B. monadelpha.*

Filaments free or united only near base.

Capsule with narrow equal horns and a columnar apex; styles much branched, covered with stigmatic papillae; staminate tepals 4; pistillate tepals 5.

Staminate tepals enlarging at anthesis, up to 18 mm. long; leaves broad, cordate at base. . . . . *B. hirta.*

Staminate tepals not enlarging at anthesis, 4 mm. long; leaves narrow, acute on one side of base, obtuse on other. . . . . *B. columnaris.*

Capsule with flat, generally unequal wings which extend to its apex.

Staminate tepals 2; pistillate tepals 2 or 5.

Tepals thick and fleshy, papillose-hirsute; leaves very broadly ovate. . . . . *B. lophoptera.*

Tepals membranaceous.

Plant densely pubescent; stem geniculate.

B. gesnerioides.

Plant glabrous.

Bracts of the pistillate flowers accrescent, exceeding the ovary; largest capsule-wing 20–36 mm. long; leaves nearly symmetric, elliptic.

B. Rossmanniae.

Bracts of the pistillate flowers inconspicuous.

Leaves nearly or quite straight, penninerved, short-ciliate; style-branches 2, again divided.

B. peruviana.

Leaves strongly oblique or transverse, more or less cordate at the palminerved base.

Style-branches again divided; leaves eciliate.

Capsule-wings subequal. . . . . *B. glauca.*

Capsule-wings strongly unequal.

B. viridiflora.

Style-branches 2, simple.

Pistillate tepals 2; leaf-margins undulate, ciliate.

Stipules ovate with a narrow apex. *B. bracteosa.*

Stipules ample, very broadly obtuse or truncate..... *B. cyathophora.*

Pistillate tepals 5..... *B. altoperuviana.*

Staminate tepals 4 or more.

Bracts of the inflorescence petaloid, glandular, very large, covering the flowers..... *B. velata.*

Bracts of the inflorescence not petaloid nor covering the flowers.

Staminate tepals 5–11; roots tuberous.

Plant white-lanate; tepals acute, 20–30 mm. long. *B. polypetala.*

Plant not lanate; tepals obtuse, 4–30 mm. long; styles with 4 or more branches.

Tepals red or purplish, narrow, 4–14 mm. long; anthers oblong.

Tepals 4–6 mm. long; styles 4-branched. *B. gracillima.*

Tepals 6–14 mm. long; styles many-branched. *B. pleiopetala.*

Tepals white, broad, 2–3 cm. long; anthers broadly obovoid..... *B. octopetala.*

Staminate tepals 4.

Leaves peltate; tepals white..... *B. Pennellii.*

Leaves basifixed.

Roots tuberous; tepals red.

Styles more than 2-branched, papillose all over; tepals 8–12 mm. long; leaves sharply lobulate..... *B. geraniifolia.*

Styles 2-branched, stigmatic tissue linear, spiral; tepals 25–30 mm. long.

Stamens 8–10; outer tepals ovate. *B. Davisii.*

Stamens very numerous.

Stem elongate; leaves broader than long. *B. cinnabarina.*

Stem very short; leaves mostly longer than broad.....*B. Veitchii.*

Roots not tuberous; stem elongate.

Leaves straight.

Leaves broadly ovate, obtuse, truncate at base.....*B. cucullata.*

Leaves lanceolate, acuminate, cuneate. *B. maynensis.*

Leaves oblique or transverse.

Capsule-wings very unequal.

Pistillate tepals obovate, 3–4 mm. long. *B. tovarensis.*

Pistillate tepals linear-lanceolate, to 14 mm. long.....*B. stenotepala.*

Capsule-wings subequal.....*B. piurensis.*

Begonia altoperuviana A. DC. in Ann. Sci. Nat. sér. 4. 11: 123. 1859.

Suffrutescent, glabrous. Branches elongate, herbaceous, purplish. Leaves obliquely ovate, acute, cordate toward the middle with the lower lobe amply rounded, 75 mm. long, 25–40 mm. wide, crenate-serrate, 10–12 nerved from the base, petiole 25–50 mm. long, stipules deciduous, ovate-oblong, subacute. Inflorescence dichotomous, much-branched, peduncle straight, 75 mm. long, exceeding the leaves. Bracts deciduous, the upper ones oblong, 2 mm. long, those beneath the pistillate flowers ciliate-dentate. Staminate tepals 2, obtuse, 6–8 mm. long. Stamens on a low torus, anthers elliptic, about equaling the filaments, the connective produced, ovate. Pistillate tepals 5 or 4(?), ovate, acute, 1–2 mm. long. Styles 3, bifid, the stigmatic tissue linear, spiral, continuous. Capsule obtuse at base, 8–10 mm. long, 16 mm. wide, the styles tardily deciduous, wings very unequal, the largest ovate, obtuse.

From the boundary region of Peru and Bolivia north of Lake Titicaca, *Weddell 4556*, type. "Caupolipan" not located, but the species undoubtedly occurs in Peru.

Begonia bracteosa A. DC. in Ann. Sci. Nat. sér. 4. 11: 132. 1859, ex char.

Erect caulescent herb, 3–25 dm. high, glabrous, very variable. Leaves strongly oblique or transverse, broadly ovate, abruptly acuminate, cordate at base, rounded elsewhere, 7–13 cm. long,

margin undulate, crenate-serrate, short-ciliate, petioles 3–9 cm. long, stipules deciduous, ovate with a narrow mucronate apex. Cymes mostly terminal, densely or laxly many-flowered, peduncles 9–17 cm. long. Bracts soon deciduous, the lowest broadly elliptic, 15 mm. long, entire, membranaceous. Pedicels very slender, 5–25 mm. long. Flowers rose. Staminate tepals 2, suborbicular, 8–13 mm. long. Stamens numerous, free, anthers oblong, equaling or exceeding the filaments, the connective produced. Pistillate tepals 2, 4–6 mm. long. Pistils 3, deeply 2-parted, the stigmas linear, spiral, continuous, placentae bilamellate, ovuliferous on all sides. Capsule 7–14 mm. long, very unequally 3-winged, the largest wing ascending, ovate or subtriangular, obtuse, to 2 cm. wide.

Mountain forests. Cuzco: Machu Picchu, 2,400 meters, *Vargas 3169; West 6416; Balls 6818*. Prov. Paucartambo, between Tambomayo and Pillahuata, 1,800–2,200 meters, *West 7115*. Paucartambo Valley, 2,400 meters, *Vargas 83*.—Indefinite: Herb. *Hooker* (type).

Begonia buddleiaefolia A. DC. in Ann. Sci. Nat. sér. 4. 11: 141. 1859.

Plant 6–9 dm. high, succulent, fulvous-pubescent. Stem erect, branching. Leaves distinctly asymmetric, oblong, acuminate, acute at one side of base and obtuse at the other, 9–18 cm. long, 20–35 mm. wide, irregularly dentate, ciliate, on the under side the nerves prominent and hispid, petioles 6–12 mm. long, stipules lanceolate, 8 mm. long. Inflorescences terminal, laxly racemose, few-flowered, 7–12 cm. long. Bracts much shorter than the pedicels, lanceolate to ovate. Staminate tepals 4, elliptic, obtuse, sparsely pubescent, the inner pair much the smaller. Stamens on a low torus, anthers elliptic, shorter than the filaments. Pistillate tepals 5, elliptic, 4 mm. long, glabrous. Styles 3, slenderly 2-parted, stigmatic tissue linear, spiral, placentae simple. Capsule cordate at base, its wings unequal, ovate, obtuse.—F.M. Neg. 7331.

Humid slopes. San Martín: Tarapoto, *Spruce 3998*, type. Endemic.

Begonia cinnabarina Hook. in Bot. Mag. *pl. 4483*. 1849. *B. Clarkei* Hook. f. in Bot. Mag. sub *pl. 5663, pl. 5675*. 1867.

Long-caulescent herb with tuberous base, to 6 dm. high. Stem erect, few-branched, flexuous, stout, puberulent. Leaves obliquely ovate or subreniform, palminerved, 1–2 dm. in diameter, obtuse, lobulate, crenate-serrate, pubescent, petioles 8–17 cm. long, stipules ovate, acuminate. Peduncles axillary, stout, 2 dm. long, red or green,

2–6-flowered. Bracts elliptic, acute, 15–18 mm. long. Pedicels slender, decurved, 1–4 cm. long. Staminate tepals 4, broadly obovate, 25 mm. long. Stamens very numerous, anthers short and broad. Pistillate tepals 5, 25–30 mm. long. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule very unequally 3-winged, 2 wings narrowly marginiform, the third subdeltoid.

Peru: *Clarke*. Bolivia.

Begonia columnaris Benth. Pl. Hartw. 131. 1839. *Sassea columnaris* Kl. Begon. 134. 1855. *Casparya columnaris* A. DC. in DC. Prodr. 15, pt. 1: 274. 1864.

Herbaceous, 2–4 dm. high. Branches fuscous-puberulous, becoming glabrous. Leaves asymmetric especially toward base, mostly straight, ovate or elliptic, acute or acuminate, base acute on one side, obtuse on other, 3–7 cm. long, shallowly lobed, serrate, ciliate, puberulent especially beneath on the nerves, petiole 2–10 mm. long, stipules deciduous, ovate, exceeding the petiole. Peduncles erect, finally exceeding the leaves, 1–4-flowered. Bracts deciduous, elliptic, setaceous-dentate at apex. Pedicels 6–16 mm. long. Flowers red. Staminate tepals 4, subequal, 4–8 mm. long, elliptic. Stamens on a low torus, anthers linear, the connective produced, subacute, filaments short. Pistillate tepals 5, elliptic. Styles 3, much-branched, wholly covered with stigmatic papillae, placentae bilamellate. Capsule 20–25 mm. long, obtuse or subcordate at base, the 3 triangular acute horns shorter than the cylindric apex.—F.M. Neg. 7313 (var. *glabra*. F.M. Neg. 20855).

Huánuco: Huallaga y Muña, 3,100 meters, *Weberbauer 6723*. Ecuador; Colombia.

Begonia columnaris var. **glabra** (A. DC.) Smith & Schubert, comb. nov. *Casparya coccinea* Kl. Begon. 128. 1855. *Sassea glabra* Kl. l.c. 134, *pl. 12, fig. C*. 1855. *Casparya columnaris* A. DC. β *glabra* A. DC. in DC. Prodr. 15, pt. 1: 274. 1864.

Completely glabrous.

Huánuco: Muña, *Ruiz*. Endemic.

Begonia cucullata Willd. Sp. Pl. 4: 414. 1805. *B. spatulata* Lodd. Bot. Cab. 2: *pl. 107*. 1817. *B. paludicola* C. DC. in Bull. Soc. Bot. Genève, sér. 2. 6: 125. *fig. 7*. 1914.

Perennial herb, caulescent, stoloniferous, glabrous, 1–10 dm. high. Leaves slightly asymmetric, broadly ovate with the base

truncate and usually inrolled, obtuse, palminerved, to 8 cm. long, 7 cm. wide, crenate-serrate, ciliate, petioles 25 mm. long, stipules persistent, oblong, obtuse, 2–3 cm. long. Cymes axillary, few-flowered, peduncle 3–5 cm. long. Bracts persistent, ovate, serrulate, 5 mm. long. Pedicels slender. Staminate tepals 4, 8–13 mm. long, the outer ones suborbicular, the inner smaller and narrowly obovate. Stamens free, numerous, filaments short, anthers linear. Pistillate tepals 4–5, obovate. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule 24–30 mm. long, unequally 3-winged, the largest wing triangular, subacute, seeds acute in the typical variety.

Valley forests. Cuzco: Prov. Convención, 900 meters, *Vargas 739* (no mature seeds, variety uncertain: a form with large, dark red petals). To Brazil.

Begonia cyathophora Poepp. & Endl. Nov. Gen. & Sp. 1: 7, *pl. 11.* 1835. *Cyathocnemis obliqua* Kl. Begon. 101. 1855. *Begonia subciliata* A. DC. in Ann. Sci. Nat. sér. 4. 11: 132. 1859.

Succulent herb, 6–10 dm. high, glabrous. Stem subsimple, strict. Leaves obliquely broad-ovate, palminerved, short-acuminate, cordate at base, 15–22 cm. long, to 16 cm. wide, shallowly angular-lobate, crenate-serrulate, pale green, petioles 5–10 cm. long, stipules deciduous, very broadly elliptic or obovate, distinct but simulating a continuous cyathium, 2–4 cm. long, entire, thin. Peduncle elongate, with 2 large bracts at summit, cyme dichotomous, many-flowered. Upper bracts deciduous, broadly ovate. Pedicels capillary, 12–24 mm. long. Staminate tepals 2, broadly ovate, cordate, obtuse, 9–11 mm. long. Stamens on a low torus, filaments short, anthers oblong, the connective produced and dilated. Pistillate tepals 2. Styles 3, short, 2-parted, placentae bilamellate. Capsule 8 mm. long, the largest wing oblong, 2 cm. wide, the other 2 very small.—F.M. Neg. 20861 (*subciliata* 8518).

Forests and thickets. Huánuco: Cuchero, *Poeppig*, type. Dist. Churubamba, Hacienda San Carlos, waterfall Río Ysabel, 1125 meters, *Mexia 8128.*—Junín: La Merced, 700 meters, *Killip & Smith 23761.* Colonia Perené, 680 meters, *Killip & Smith 24988.*—Cuzco: Prov. Convención, Chaupimayo, *Soukup 815.*—Indefinite: *Pavón* (type of *B. subciliata*). Endemic.

Begonia Davisii Veitch ex Hook. f. in Bot. Mag. *pl. 6252.* 1876.

Subacaulescent herb with tuberous base. Leaves spreading, palminerved, obliquely ovate-cordate to suborbicular, 8 cm. long,

subacute, green and glossy above with scattered stiff hairs, more glabrous and red beneath, margins shallowly lobulate and crenulate, ciliate, petiole 4–5 cm. long, stout, hirsute. Peduncles simple, erect, 12 cm. long, bright red, glabrous, 3–4-flowered. Bracts 2, broadly ovate or oblong, 15–18 mm. long, serrate, ciliate, red. Pedicels 2–3 cm. long. Flowers bright red. Staminate tepals 4, subequal, 3 cm. long, the outer broadly ovate, subacute, the inner elliptic, obtuse. Stamens free, 8–10, anthers oblong, as long as the filaments. Pistillate tepals 5, elliptic. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bifid. Capsule-wings subdeltoid, one 3–4 times larger than the others.

Indefinite: Near Chupe, 3,000 meters, *Davis*. Endemic.

Begonia geraniifolia Hook. in Bot. Mag. *pl. 3387*. 1835. *B. petalodes* Lindl. in Bot. Reg. 21: *pl. 1757*. 1835 (pistillate flowers—freak or drawing error?). *Eupetalum Lindleyanum* Gaud. Atl. Bonite *pl. 50*. 1846. *Begonia Gaudichaudii* Walp. Rep. 5: 769. 1846. *Eupetalum Kunthianum* Kl. Begon. 21. 1855. *E. tuberosum* Kl. l.c. 22. 1855.

Herb, 15–30 cm. high from a large tuberous base, glabrous, succulent. Stem erect, branching well above the base with leaves and branches usually whorled. Leaves reniform or suborbicular, cordate at base, palminerved with 5–9 acute lobes, to 6 cm. long and 8 cm. wide, coarsely dentate, green, often with a narrow red margin, petiole 1–8 cm. long, stipules persistent, broadly ovate, entire or sparsely and coarsely crenate-dentate, 5–9 mm. long. Peduncles erect, 1–2-flowered, much exceeding the leaves. Bracts persistent, like the stipules. Pedicels 15–25 mm. long. Staminate tepals 4, subequal, 8–12 mm. long, suborbicular. Stamens numerous on a short but distinct column, radially seriate(?), anthers oblong, about as long as the filaments. Pistillate tepals 5, suborbicular. Styles 3, bifid with the branches 2–3-parted, each division with a tight spiral of stigmatic tissue at apex, placentae 2-parted with the parts usually again divided, ovuliferous on all sides. Capsule 6–8 mm. long, acute at base, the 3 wings subequal, narrowly triangular, often ascending, up to 25 mm. wide.—F.M. Neg. 20862 (*Gaudichaudii* 7328).

Clefts of limestone rocks. Lima: Amancaes, *Ruiz & Pavón; André 4088*. Lima, *Wilkes Expedition; Mathews 734*, type. San Lorenzo, *Gaudichaud*. Atocongo, 250–500 meters, *Pennell 14756*. Prov. Chancay, 5 km. north of Barranca, 200–600 meters, *Worth 9115*. Endemic. "Flor de San Juan."

Begonia gesnerioides Smith & Schubert, sp. nov.

Herba, 5 dm. alta, ferrugineo-pubescens; caule geniculata; foliis ellipticis, acutis, basi inaequaliter cuneatis, penninerviis, ad 11 cm. longis, 4 cm. latis, serratis, sparse hirsutis, petiolis 7 mm. longis, stipulis ellipticis, 6–8 mm. longis, brunneis, membranaceis; cymis laxe subpaucifloris, pedunculis 33 mm. longis; bracteis lanceolatis, ad 9 mm. longis, brunneis, membranaceis; pedicellis gracilibus 8–9 mm. longis; tepalis masculinis 2, late ovato-cordatis, subacutis, 9 mm. longis, albis; staminibus liberis, antheris ellipticis, filamenta subaequantibus; floribus femineis capsulisque ignotis.

Forest. San Martín: Juanjuí, Alto Río Huallaga, 400–800 meters, *Klug 4296* (type in Gray Herb.).

Begonia glabra Aubl. Pl. Guian. 2: 916. *pl. 349*. 1775. *B. scandens* Sw. Prodr. 86. 1788. *B. elliptica* HBK. Nov. Gen. & Sp. 7: 180, *pl. 641*. 1825. *B. lucida* Otto & Dietr. in Allg. Gartenz. 16: 162. 1848. *B. Moritziana* Kunth & Bouché in Ind. Sem. Hort. Berol. 16. 1848. *B. physalifolia* Liebm. in Kjoeb. Vid. Medd. 19. 1853. *Wageneria deflexa* Kl. Begon. 113. 1855. *W. lucida* Kl. l.c. 114. 1855. *W. montana* and *W. glabra* l.c. 115. 1855.

Stem scandent, rooting at the nodes, glabrous. Leaves variable, nearly symmetrical, broadly ovate, 4–12 cm. long, short-acuminate, rounded or barely cordate at base, sparsely serrate and ciliate to entire, glabrous, petioles 1–8 cm. long, stipules persistent, ovate-oblong, mucronate, entire, 10–22 mm. long. Cymes axillary, many-flowered, diffuse, peduncle 6–12 cm. long. Bracts persistent, minute. Pedicels 6–16 mm. long, fine. Staminate tepals 4, the outer broadly obovate, 3–6 mm. long, the inner narrower. Stamens free, few, anthers oblong. Pistillate tepals 5, elliptic, 4–6 mm. long. Styles 3, 2-parted, completely covered by stigmatic papillae, placentae simple. Capsule 6–9 mm. long, the largest wing oblong, spreading or barely ascending, 10–14 mm. wide, the other two marginiform, very narrow.

Dense humid forests. Loreto: Alto Río Itaya, 145 meters, *Williams 3497*. Lower Río Huallaga, 155–210 meters, *Williams 3911*. Soledad, on Río Itaya, 110 meters, *Killip & Smith 29717*. Cachipuerto, Río Cachiyacu, between Balsapuerto and Moyobamba, 250 meters, *Klug 3129*.—Cajamarca: Jaén, *Humboldt & Bonpland*.—San Martín: Tarapoto, *Spruce 2846*.—Huánuco: Muña, *Ruiz*.—Junín: Puerto Bermúdez, 375 meters, *Killip & Smith 26642*.—Indefinite: Chacahuassi, *Pavón*.—Eastern Peru, *Spruce 3960*. Central America; West Indies; Guiana to Colombia to Bolivia.

Begonia glabra var. **amplifolia** (A. DC.) Smith & Schubert, comb. nov. *B. scandens β amplifolia* A. DC. in DC. Prodr. 15, pt. 1: 362. 1864.

Leaves up to 20 cm. long and 15 cm. wide, entire. Largest wing of the ovary ascending.

San Martín: Near Tocache, *Poeppig 1928.*—Huánuco: Pampayacu, *Poeppig 1063.* Colombia.

Begonia glauca (Kl.) R. & P. ex A. DC. in DC. Prodr. 15, pt. 1: 330. 1864. *Pritzelia glauca* Kl. Begon. 109. 1855.

Shrubby, glabrous. Branches subsimple, woody at base, subflexuous, even. Leaves oblique or transverse, ovate, acuminate, deeply cordate at base with one side broadly rounded, palminerved with the longest side penninerved, pale beneath, margin undulate, remotely denticulate, eciliate, petioles 2.5–5 cm. long, stipules deciduous, ovate-oblong, obtuse or mucronate, 16–20 mm. long. Cymes dichotomous, 4–5 times branched, diffuse, peduncle axillary, 5 cm. long, exceeded by the leaves. Bracts deciduous, the lower ones not known, the upper 2 mm. long, elliptic. Pedicels 10–13 mm. long. Staminate tepals 2, suborbicular, 6 mm. long. Stamens on a torus. Pistillate tepals 2, ovate. Capsule orbicular with subequal rounded wings, 8–10 mm. long.—F.M. Neg. 7341.

Huánuco: Near Muña, *Ruiz & Pavón.* Endemic.

Begonia gracillima A. DC. in Ann. Sci. Nat. sér 4. 11: 120. 1859.

Low stemless herb, presumably with a tuberous base. Leaves broadly ovate, obtuse, more or less cordate at base, palminerved, 12–24 mm. long, 16–24 mm. wide, irregularly crenate-dentate, puberulent above and on the nerves beneath, purplish beneath, petiole 12–24 mm. long, subglabrous. Peduncle flexuous, 75 mm. long, 2–4-flowered. Bracts 2, persistent, elliptic-ovate, entire, 3 mm. long, glabrous. Pedicels 10–12 mm. long. Staminate tepals 5–8, subequal, elliptic or narrowly obovate, 6 mm. long, puberulent at base, purplish. Stamens free, anthers oblong, the connective not produced. Pistillate tepals 9, 4 mm. long. Ovary puberulent, styles 3, twice forked, the stigmatic tissue in separate spirals at the ends of the divisions. Capsule winged.

Indefinite, *Gay.* Description compiled. This may be only a depauperate form of *B. pleiopetala.*

Begonia hirta (Kl.) Smith & Schubert, comb. nov. *Casparya hirta* Kl. Begon. 127, *pl. 11, fig. C.* 1855. *C. cordifolia* A. DC. *β hirta* A. DC. in DC. Prodr. 15, pt. 1: 273. 1864.

Suffrutescent, 3–6 dm. high, branching, ascending. Branches densely ferruginous-hirsute. Leaves obliquely ovate, acute or acuminate, unequally cordate at base with one side very broadly rounded, 5–20 cm. long, unevenly dentate, ciliate, pubescent especially beneath on the nerves, petioles 12–30 mm. long, stipules ovate-oblong, 6–20 mm. long. Cymes axillary, laxly 4–8-flowered, peduncles shorter than the leaves. Bracts deciduous, oblong or obovate, subentire. Staminate pedicels 2–4 cm. long. Staminate tepals 4, accrescent, elliptic, becoming 18–35 mm. long. Stamens on a low torus, filaments shorter than the linear anthers. Pistillate pedicels 5–10 mm. long. Pistillate tepals 5, like the staminate. Styles 3, much divided, the elongate linear branches covered with stigmatic papillae, placentae 2-parted. Capsule 18–22 mm. long and broad, obconic at base, the 3 conical lateral horns about as long as the columnar apex. —F.M. Negs. (*cordifolia* 20853, var. *hirta* 20854).

Huánuco: Near Muña, *Ruiz.*—Junín: Río Masamerich, 3,100 meters, *Weberbauer 6639.* Endemic.

Begonia hirta var. **cordifolia** (A. DC.) Smith & Schubert, comb. nov. *Casparya cordifolia* A. DC. in DC. Prodr. 15, pt. 1: 273. 1864. *Begonia cordifolia* Warb. in Engl. & Prantl, Pflanzenfam. 3, 6a: 146. 1894, not A. DC. 1864.

Stem and branches soon glabrous.—F.M. Negs. 7315, 20853.

Huánuco: Muña, *Ruiz & Pavón.*

Begonia hirtella Link, Enum. Hort. Berol. 2: 396. 1822. *B. ciliata* HBK. Nov. Gen. & Sp. 7: 178. 1825. *B. villosa* Lindl. in Bot. Reg. 15: *pl. 1252.* 1829. *B. diversifolia* Grah. *β nana* Walp. in Nov. Act. Acad. Leop.-Carol. 19: Suppl. 1: 408. 1843. *B. hirtella* Link. var. *nana* A. DC. in Mart. Fl. Bras. 4, pt. 1: 345. 1861.

Herb, 2–9 dm. high. Stem branching, villous with brownish hairs 2 mm. long. Leaves strongly asymmetric, transversely ovate, acute, very shallowly cordate at base, 3–11 cm. long, broad, palmate-nerved, shallowly or not lobed, crenate-serrate, sparsely pilose above, petioles 2–7 cm. long, stipules persistent, ovate-oblong, lacerate-ciliate. Cymes axillary, usually few-flowered, peduncle 3–5 cm. long. Bracts persistent, small, lacerate. Pedicels 4–12 mm. long. Staminate tepals 4, the outer 2–4 mm. long, suborbicular, the inner oblong, much smaller. Stamens free, 9–22. Pistillate tepals 5, obovate.

Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae variable. Capsule 10–14 mm. long, the wings subdeltoid, unequal, the largest 9–12 mm. wide.—F.M. Neg. 20892.

Humid forests. San Martín: Tarapoto, *Spruce 3982.*—Arequipa or Puno: Altos de Toledo, *Meyen.*

Begonia humilis Ait. Hort. Kew. ed. 1. 3: 353. 1789. *B. lucida* Haworth, Saxifrag. Enum. 197. 1821. *B. Meyeniana* Walp. in Nov. Act. Leop.-Carol. 19: Suppl. 1: 409. 1843. *B. Pavoniana* A. DC. in Ann. Sci. Nat. sér 4. 11: 142. 1859.

Slender herb, 3–6 dm. high, branching at base, green. Leaves strongly asymmetric, transversely ovate, cordate at base, acuminate at one side, 5–11 cm. long, subpinnate-nerved, shallowly lobed, serrate, ciliate, subdensely pilose above, petioles 1–4 cm. long, stipules persistent, narrowly ovate, serrulate, ciliate, 5–7 mm. long. Cymes axillary, laxly 2–5-flowered, peduncle 2–3 cm. long. Bracts minute, ovate, lacerate. Pedicels 5–10 mm. long. Staminate tepals 2 or 4, the outer ones suborbicular, 3–4 mm. long. Stamens free, 8–20, anthers elliptic, the connective produced. Pistillate tepals 5, 2–4 mm. long. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae very variable even in the same ovary, simple or unevenly 2-parted. Capsule 6–8 mm. long, emarginate at base, wings subdeltoid, obtuse, unequal, the largest 7–9 mm. wide.—(*B. Pavoniana.* F.M. Neg. 20808).

Moist shaded banks. Junín: Colonia Perené, 680 meters, *Killip & Smith 25003.* Indefinite: Mountains, *Pavón.* Tobago; Trinidad; Guiana; Venezuela; Brazil.

Begonia lophoptera Rolfe in Kew Bull. 28. 1914.

Erect herb, over 3 dm. high. Stems rather stout, pilose. Leaves oblique, very broadly ovate, acute, subtruncate at base, palminerved with very short angular lobes, densely serrate, 6–10 cm. long, 5–11 cm. wide, lustrous above, pubescent on the nerves beneath, thin, petioles 3–12 cm. long, villous, stipules narrowly ovate, 15–25 mm. long, denticulate. Peduncles suberect, 6–8 cm. long, hirsute-villous, scarlet, 8–12-flowered. Bracts elliptic, denticulate. Flowers scarlet or white, hirsute-villous to nearly papillose outside. Staminate tepals 2, spreading, broadly elliptic, obtuse, 10–15 mm. long. Stamens on a globose torus, anthers linear, exceeding the filaments, the connective conspicuously produced. Pistillate tepals 2, broadly ovate, obtuse. Styles 3, deciduous, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule pendulous,

hirsute-tuberculate, unequally 3-winged, the smaller wings triangular, subobtuse, 8 mm. long, the largest wing broadly oblong, 13 mm. long, thickish, its apex truncate, thickened, toothed and pilose.

Forests. San Martín, Moyobamba District, *Forget.*—Huánuco: Pozuzo, *Pearce 556* (type).—Cuzco: near Río Yanamayo, below "Pillahuata," 2,000–2,300 meters, *Pennell 14069*. Marcapata Valley, 1,200 meters, *Herrera 1173*. Endemic.

Begonia maynensis A. DC. in Ann. Sci. Nat. sér. 4. 11: 126. 1859.

Herbaceous, 3–8 dm. high, glabrous. Stem simple, straight, succulent, decumbent and stoloniferous at base. Leaves erect, crowded at top of stem with lower ones deciduous, strongly asymmetric but straight, penninerved, oblanceolate, acuminate, cuneate, 10–28 cm. long, 3–8 cm. wide, serrulate, petioles 16–36 mm. long, stipules subpersistent, narrowly lanceolate, acuminate, mucronate, entire, 1–2 cm. long, dark brown. Cymes axillary, much exceeded by the leaves, diffuse, few-flowered, peduncles 25–40 mm. long. Bracts persistent, small, narrowly lanceolate. Pedicels 10–25 mm. long. Staminate tepals 4, acute, the outer ovate, 6–7 mm. long, the inner smaller, elliptic. Stamens numerous, subfree, anthers small, broadly obovoid, much shorter than the filaments. Pistillate tepals 5, lanceolate, acute, 4–7 mm. long. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae 2-parted. Capsule 14–23 mm. long, rounded at base, truncate at apex, wings subequal, rounded or acute, 8–12 mm. wide.—F.M. Neg. 7345.

Dense humid forests. Loreto: Maynas, *Spruce 4859*, type. Soledad, on Río Itaya, 110 meters, *Killip & Smith 29553*. Mouth of Río Santiago above Pongo de Manseriche, 200 meters, *Mexia 6130*. Hills to left of Río Marañón above Pongo de Manseriche, 250 meters, *Mexia 6348*.—San Martín: Zepelacio, near Moyobamba, 1,100 meters, *Klug 3716* (sterile, doubtful; leaves variegated).

Begonia monadelpha (Kl.) R. & P. ex A. DC. in DC. Prodr. 15, pt. 1: 286, 1864. *Barya monadelpha* Kl. Begon. 23, *pl. 2, fig. B.* 1855.

Herbaceous or suffrutescent, much branched, up to 2 meters high. Branches puberulent. Leaves very asymmetric, obliquely broad-ovate, acuminate, cordate at base, palmate-nerved, 5–18 cm. long, short-lobed, serrate, puberulent especially beneath on the nerves, petioles 1–11 cm. long, puberulent, stipules deciduous, elliptic, acuminate, entire. Cymes axillary, dichotomous, diffuse,

many-flowered, red, peduncle stout, 5–14 cm. long. Bracts deciduous, elliptic, large. Pedicels slender, 10–35 mm. long. Staminate tepals 4, lanceolate, acute, 18–24 mm. long. Stamens numerous on an elongate column, anthers broadly elliptic, the connective scarcely produced. Pistillate tepals 6. Styles 3, 1 cm. long, short-connate, deeply bifid, placentae bilamellate. Capsule ovoid, 10–14 mm. long, the largest wing narrowly triangular, 25–30 mm. wide, the others narrowly marginiform.—F.M. Neg. 20852.

Forests. Amazonas: Chachapoyas, *Mathews.*—Libertad: Prov. Pataz, valley of Río Mishiollo, 2,700–2,800 meters, *Weberbauer 7035* (young, flowers atypical?).—Huánuco: Muña, *Ruiz & Pavón,* type. Huallaga and Muña, *Weberbauer 6714.* Near Carpish, 2,800 meters, *Stork & Horton 9895.*—Cuzco: near Río Yanamayo, below "Pillahuata," 2,000–2,300 meters, *Pennell 14050.*

Begonia octopetala L'Hér. Stirp. 101. 1788. *B. grandiflora* Knowles & Westc. Floral Cab. 1: *pl. 25.* 1837. *Huszia octopetala* Kl. Begon. 18, *pl. 1, fig. A.* 1855.

Perennial stemless herb with tuberous base. Leaves very broadly cordate-ovate or suborbicular, shallowly palmatifid with 7–9 obtuse lobes, 6–20 cm. long, serrate, sparsely puberulent, petioles 10–45 cm. long, puberulent, stipules very broadly ovate, obtuse, entire, drying dark brown, glabrous. Peduncles erect, 3–4 cm. long, puberulent, 3–10-flowered. Bracts like the stipules, 7–11 mm. long. Flowers white. Pedicels 15–70 mm. long, puberulent. Staminate tepals 8, elliptic or obovate, obtuse, 2–3 cm. long. Stamens numerous, free, filaments elongate, anthers short, broadly obovoid. Pistillate tepals 6. Styles 3, much-branched with the stigmatic tissue in separate spirals at the end of each division, placentae bilamellate. Capsule 10–16 mm. long, its largest wing suboblong, erose-truncate, 25 mm. wide, several times larger than the other two.

Thickets and rock-crevices. Lima: Near Lima, *Dombey; Pavón; MacLean; Mathews.* San Buenaventura, 2,700–2,900 meters, *Pennell 14531.* Valley of Almancaes, 305 meters, *Mexia 04020.* Dist. Pachacamac, Atacongo, 360 meters, *Mexia 04051.* Loma de Atacongo, 600–700 meters, *West 3617.* Amancay, 5 km. southeast of Lima, 300 meters, *Stork & Horton 9269.* Prov. Huarochiri, quebrada southwest of Matucana, 2,900 meters, *Goodspeed 11329.* Indefinite: *Soukup 1302.* Endemic.

Begonia parviflora Poepp. & Endl. Nov. Gen. & Sp. 1: 7, *pl. 12.* 1835. *B. micrantha* Steud. Nomencl. ed. 2. 1: 194. 1840.

Scheidweileria parviflora Kl. Begon. 59. 1855. *Begonia myriantha* Britton in Bull. Torrey Club 18: 35. 1891.

Shrubby, 2–4 meters high. Trunk simple, slightly branched near top, 20–25 cm. in diameter. Branches spreading, 6 dm. long. Leaves palmate, subsymmetrical, shallowly or deeply 5–7-lobed with lobes sometimes subdivided, cordate at base, 2–6 dm. wide, finely serrate, subglabrous above, ferruginous-tomentose beneath, especially on the nerves, bearing cystoliths, petioles up to 6 dm. long, ferruginous-tomentose, stipules lanceolate, deciduous. Inflorescences axillary and terminal, solitary, dioecious, cymose, many-flowered, 2–6 dm. broad, peduncle 3–6 dm. long. Bracts minute, deciduous. Staminate tepals 4, elliptic or obovate, subequal, 3–4 mm. long. Stamens on a low torus, anthers elliptic. Pistillate tepals 5, elliptic, 4 mm. long. Styles 3, 2-branched, the stigmatic tissue linear, spiral, continuous, placentae simple. Capsule 8 mm. long, 10 mm. wide, wings obcordate, cuneate-decurrent at base.

Forests. Loreto: Balsapuerto, 220 meters, *Klug 3073*. Pumayacu, between Balsapuerto and Moyobamba, 600–1,200 meters, *Klug 3225*.—San Martín: Moyobamba, *Mathews*. Tarapoto, *Spruce 3945*.—Huánuco: Pampayaco (Cuchero), *Poeppig*, type.—Junín: Pangoa, *Mathews 1211*. Colombia; Bolivia.

Begonia Pennellii Smith & Schubert, sp. nov.

E fragmentis solum cognita, verisimiliter tuberosa et acaulis, perennis; foliis peltatis, 7-nerviis, palmatifidis, ad 2 dm. longis et aequilatis, utrinque puberulis, dense serratis, lobis brevibus sed acuminatis, sinibus late rotundatis, petiolis ad 28 cm. longis; pedicellis gracilibus, glabris, 2–4 cm. longis; tepalis masculinis 4, subaequalibus, ellipticis, obtusis, ca. 25 mm. longis, glabris, exterioribus roseis, interioribus albis vel extus roseis; staminibus numerosis, liberis, antheris late obovoideis, brevissimis, filamentis elongatis.

Thickets. Cuzco: above "Pillahuata," Cerro de Cusilluyoc, 2,800–3,100 meters, *Pennell 14126* (type in Gray Herb.).

Begonia peruviana A. DC. in Ann. Sci. Nat. sér. 4. 11: 133. 1859.

Perennial herb 1.5–2.5 meters high, glabrous. Stems subscandent. Leaves straight or nearly so, asymmetric, elliptic, acuminate, 5–10 cm. long, 18–36 mm. wide, acute at one side of base and the other obtuse, penninerved, thin, serrate, short-ciliate, petioles 6–15 mm. long, stipules oblong, 16–30 mm. long. Cymes axillary, laxly many-flowered, peduncles 2–5 cm. long. Bracts deciduous, minute. Staminate tepals 2, suborbicular, 4–5 mm. long. Stamens free,

anthers oblong, the connective produced. Pistillate tepals 2, like the staminate. Styles 3, 2-branched with the branches again divided, placentae bilamellate, ovule-bearing on all sides. Capsule unequally 3-winged, 2 costiform, the third ovate.—F.M. Neg. 24199.

Woods and thickets. Huánuco: Huallaga and Muña, 2,500–2,600 meters, *Weberbauer 6718*.—Junín: Huacapistana, 1,800–2,400 meters, *Killip & Smith 24514*. Pichis Trail, Yapas, 1,350–1,600 meters, *Killip & Smith 25595*.—Cuzco: Near Río Yanamayo, below "Pillahuata," 2,000–2,300 meters, *Pennell 14054*. Southwest slope of Huayna Picchu, 2,700 meters, *West 6440*.—Indefinite: near Palca, *Pavón*. Near Jambrasbamba, *Mathews*.

Begonia (§ Begoniastrum) **piurensis** Smith & Schubert, sp. nov.

Herba perennis, ad 1 m. alta, glabra, caulescens; foliis valde asymmetricis, transverse ovatis, acuminatis, 6.5–14.5 cm. longis, ad 6 cm. latis, basi late cordatis, 4–5-nervis, marginibus undulatis, crenato-serratis, petiolis ad 45 mm. longis, stipulis ignotis; cymis laxe dichotomis, submultifloris, axillaribus, pedunculis 65 mm. longis; bracteis deciduis, late ovatis, integris, 4 mm. longis; pedicellis gracilibus, 15–24 mm. longis; floribus roseis vel fere albis; tepalis masculinis 4, exterioribus late ovatis, subacutis, 9 mm. longis, interioribus anguste obovatis, 8 mm. longis; staminibus liberis, antheris ellipticis, quam filamenta multo brevioribus; tepalis femineis 5, subaequalibus, obovatis, subacutis, 9 mm. longis; stylis 3, profunde bifidis, stigmatibus spiraliter cinctis; placentis bipartitis, undique ovuliferis; capsulis 11 mm. longis (alis inclusis), alis subaequalibus, late subtriangularibus, obtusis, basi decurrentibus, ad 8 mm. latis.

Piura: Prov. Huancabamba, on clay banks, quebradas immediately northwest of Canchaque, 1,200 meters, *Stork 11393* (type in Herb. Univ. California).

Begonia pleiopetala A. DC. in Ann. Sci. Nat. sér. 4. 11: 121. 1859.

Stemless herb. Caudex globose or short-cylindric, 20–45 mm. long, covered with roots, gemmae and stipules. Leaves obliquely cordate-ovate, palminerved, shallowly and bluntly lobed, crenate-serrate, 3–8 cm. long, sparsely puberulent above, petioles 3–6 cm. long, tomentose, stipules oblong, obtuse, entire, eciliate, 6 mm. long. Peduncles slender, 11–15 cm. long, tomentose, 1–2-flowered. Bracts 2, persistent, elliptic, obtuse, entire, 5–8 mm. long, drying red-brown. Pedicels 10–48 mm. long, tomentose. Flowers rose. Staminate tepals 9–11, oblong or narrowly obovate, obtuse, 8–14 mm. long, the

outer ones pubescent at base. Stamens numerous, free, anthers oblong, the connective produced. Pistillate tepals 8, elliptic. Styles 3, much-branched, with the stigmatic tissue in separate spirals at the end of each division, placentae bilamellate. Capsule 10 mm. long, one wing deltoid, 7–11 mm. wide, the others narrowly costiform, inconspicuous.

Piura: Prov. Huancabamba, above Palambla, 2,700–2,800 meters, *Weberbauer 6026*.—Puno: Prov. Sandía, Limbani, 3,200 meters, *Vargas 1317*.—Indefinite, *MacLean*, type; *Soukup 1226*. Bolivia.

Begonia Poeppigiana (Kl.) A. DC. in DC. Prodr. 15, pt. 1: 376. 1864. *Lepsia Poeppigiana* Kl. Begon. 63. 1855.

Much-branched shrub or perennial herb, erect, glabrous. Branches slender, spreading. Leaves pinnate-nerved, elliptic, subacute, unequally obtuse at base, 8–18 mm. long, setose-serrate, thin, white-spotted beneath, petioles 1–2 mm. long, stipules persistent, lanceolate, acuminate, entire except for the setose apex, brown, membranaceous, 2–4 mm. long. Inflorescences axillary, the staminate 2-flowered, the pistillate 1-flowered, peduncle very slender, 5–12 mm. long. Bracts minute, persistent. Pedicels 5–9 mm. long. Staminate tepals 4, 4 mm. long, the outer obovate, the inner oblong. Stamens borne on a column, anthers elliptic, the connective produced. Pistillate tepals 5, elliptic, subacute. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae simple. Capsule 6–8 mm. long, the wings unequal, the largest deltoid, acute or obtuse, 7–8 mm. wide.—F.M. Neg. 20823.

On rocks in forests. Huánuco: Cuchero, *Poeppig*, type. Trail along Río Huallaga, near Riachuela Chontalagua, 815 meters, *Mexia 8298*. Endemic.

Begonia polypetala A. DC. in The Garden, 14: 531. 1878.

Herb, stemless with a tuberous base. Leaves very broadly ovate or suborbicular, acute, deeply cordate, to 25 cm. long, 20 cm. broad, palmately 7-nerved with very short obtuse lobes, irregularly serrate, pubescent above, white-lanate beneath, petioles 18–20 cm. long, white-lanate. Peduncle 40–42 cm. long, white-lanate, 2-flowered. Bracts persistent, in pairs, elliptic, acute, 18–20 mm. long, entire. Pedicels 20–22 mm. long. Staminate tepals 9–10, narrowly elliptic, acute, 25–30 mm. long, red. Stamens numerous, anthers oblong, shorter than the filaments, the connective produced, acute. Pistillate tepals 9, 20 mm. long, deep red, tomentose outside. Styles 3, branched, placentae bilamellate, ovuliferous on all sides. Capsule

tomentose, unequally 3-winged with one very large and ascending.—F.M. Neg. 24202.

Andes of Peru, *Froebel.* Endemic.

Begonia Rossmanniae A. DC. in DC. Prodr. 15, pt. 1: 333. 1864. *Rossmannia repens* Kl. Begon. 99, *pl. 9, fig. A.* 1855, not *Begonia repens* Lam. 1785.

Scandent(?) shrub, glabrous. Leaves but slightly asymmetric, elliptic, acuminate, rounded at base, penninerved, serrate, ciliate, 6–9 cm. long, petioles 4–15 mm. long, stipules deciduous, oblong, acuminate, 3–10 mm. long. Cymes terminal, 4–12-flowered, peduncle 2 cm. long. Lower bracts large, membranaceous, red, fugacious. Flowers rose to brick red. Pedicels 15 mm. long. Staminate tepals 2, broadly ovate, 6–8 mm. long. Stamens free, anthers elliptic, obtuse, shorter than the filaments, the connective produced. Bracts below the pistillate flowers persistent, accrescent, suborbicular, cordate, exceeding the ovary. Pistillate tepals 2, broadly ovate. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule with 2 very small wings, the third subascending, oblong, 20–36 mm. long.—F.M. Neg. 20860.

Huánuco: Pueblo Nuevo, *Ruiz & Pavón,* type.—Cuzco: Prov. Paucartambo, Cosñipata, 800 meters, *Weberbauer 6939.* Colombia; Ecuador.

Begonia Spruceana A. DC. in Ann. Sci. Nat. sér. 4. 11: 142. 1859.

Slender herb, 2–6 dm. high, branching at base, green, leaves strongly asymmetric, straight or rarely transverse-ovate, unequally cuneate to cordate at base, acuminate, subpinnate-nerved, shallowly lobed, serrate, glabrous or nearly so, petioles 1–2 cm. long, stipules persistent, narrowly lanceolate, acuminate, entire, glabrous. Cymes axillary, laxly few-flowered, peduncle 15–30 mm. long. Bracts persistent, minute, ovate, entire. Pedicels 5–10 mm. long. Staminate tepals 2, suborbicular, 2 mm. long. Stamens free, few, anthers elliptic or ovate, the connective produced. Pistillate tepals 5, elliptic, 2 mm. long. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae very variable even in the same ovary. Capsule 6 mm. long, subelliptic, the wings equal forming an even rounded margin 2–3 mm. wide.—F.M. Neg. 7330.

Forests. Loreto: Caballo-Cocha on the Amazon River, *Osgood 5.* Between Yurimaguas and Balsapuerto, 135–150 meters, *Killip & Smith 28091.* Balsapuerto, 220 meters, *Klug 2840, 2923.* Gami-

tanacocha, Río Mazán, 100–125 meters, *Schunke* 323.—San Martín: Tarapoto, *Spruce 4211*, type. Colombia; Ecuador.

Begonia (§ Begoniastrum) **stenotepala** Smith & Schubert, sp. nov.

Herba perennis, 2–5 dm. alta, glabra, basi fibrosa, caule elata; foliis transverse ovatis, abrupte acuminatis, basi truncatis, alibi rotundatis, palminerviis, 12–13 cm. longis, atro-viridibus, lucidis, marginibus integris, eciliatis, leviter undulatis, petiolis 7–9 cm. longis, stipulis ellipticis, rotundatis apiculatisque, 2 cm. longis, integris, viridibus, tenuibus; cymis axillaribus, solitariis, laxe 4–8-floris, pedunculis 8–10 cm. longis; bracteis inferioribus late ovatis, 2 mm. longis; floribus masculinis ignotis; pedicellis gracilibus, 1–2 cm. longis; bracteis floris feminei late ovato-cordatis, serratis, ovarium fere aequantibus, atro-rubris; tepalis femineis 5, subaequalibus, ad 14 mm. longis, anguste ellipticis, rubris; stylis 3, profunde bifidis, stigmatibus spiraliter cincta; placentis bipartitis undique ovuliferis; capsulis 9–10 mm. longis, rubris, alis duabus parvis, costiformibus, tertia anguste subtriangulari, obtusa, ad 27 mm. lata.

Cuzco: Forest of middle and lower montaña zone, along Río Tambomayo, between Tambomayo and Asunción, 900–1,400 meters, *West 7114* (type in Herb. Univ. California).

Begonia tovarensis Kl. Begon. 31. 1855. *B. Moritziana* Kl. l.c. 1855.

Herb, 2–12 dm. high, very sparsely brown-pilose to glabrous. Stem erect, red. Branches short. Leaves more or less asymmetric, broadly ovate or suborbicular, acute or rounded, cordate at base, 2–9 cm. long, palminerved, crenate-serrate, ciliate, glabrous above, petioles 5–45 mm. long, stipules ovate-oblong, to 10 mm. long, ciliate-serrulate. Cymes axillary, few-flowered, peduncle 15–45 mm. long. Bracts persistent, ovate, 2–4 mm. long, fimbriate. Pedicels 5–17 mm. long. Staminate tepals 4, the outer orbicular, 8 mm. long, the inner smaller, narrowly obovate. Stamens free, numerous, filaments short, anthers oblong. Pistillate tepals 5, obovate, 3–4 mm. long. Styles 3, 2-parted, the stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule 10–15 mm. long, its wings decurrent, very unequal, the largest usually ascending, tapering and often hooked, to 23 mm. wide, seeds curved with attenuate apices. —F.M. Neg. 20901.

Forests. San Martín: Zepelacio, near Moyobamba, 1,100–1,200 meters, *Klug 3389*. Cuba; Mexico; Central America; Colombia; Venezuela.

Begonia Veitchii Hook. f. in Bot. Mag. *pl. 5663*. Sept. 1867. *B. rosaeflora* Hook. f. in Bot. Mag. *pl. 5680*. Dec. 1867.

Succulent herb, 30–75 cm. high, with tuberous base, quite variable. Stem very short. Leaves very broadly cordate-ovate to suborbicular or reniform, obtuse, 5–10 cm. long, lobulate, crenate-serrate, dark green and sparsely pubescent to glabrous above, glaucous and often densely pubescent beneath, often bullate, petioles stout, 3–12 cm. long, stipules triangular, red. Peduncles stout, 2–3 dm. long, overtopping the leaves, red or green, pubescent or glabrous, 2–4-flowered. Bracts paired, broadly elliptic, entire or crenulate. Pedicels 1–3 cm. long. Staminate tepals 4, broadly obovate or elliptic, obtuse or emarginate, 25–30 mm. long, red. Stamens very numerous, free, anthers broadly elliptic, shorter than the filaments. Pistillate tepals 5, like the staminate. Styles 3, 2-parted, stigmatic tissue linear, spiral, continuous, placentae bilamellate. Capsule obcuneate, 2 wings very narrow, the third 2–3 times larger, subdeltoid.

Cliffs and open slopes. Cuzco: Near Cuzco, 3,700–3,800 meters, *Pearce*, type. Machu Picchu, 2,300 meters, *West 8025; Vargas 536; Hunnewell 16057*. Lares Valley, *Soukup 24*.—Apurímac: Soccllaccasa Pass, Abancay-Cuzco trail, 3,800 meters, *West 3818*. Bolivia?

Begonia velata Smith & Schubert, sp. nov.

Herba ramosa, glabra sed utrinque sparse glandulosa; caule robusta, geniculata; foliis valde asymmetricis, palmatis, profunde 5-fidis, ad 16 cm. latis, laxe dentatis, basi late cordatis, lobis subtriangularibus, late acutis, petiolis ad 9 cm. longis, stipulis membranaceis, amplis, mox deciduis; pedunculis axillaribus, ad 9 cm. longis, paucifloris; bracteis maximis, amplis, flores juniores occultantibus, pulchre rubris, glandulosis, integris, petaloideis; pedicellis ad 2 cm. longis; floribus fulgide rubris; tepalis masculinis 4, late ovatis, exterioribus ad 2 cm. longis, interioribus subduplo brevioribus; staminibus numerosis, liberis, antheris crasse obovoideis, quam filamenta bene brevioribus; tepalis femineis verisimiliter 5, late ovatis, ad 25 mm. longis; stylis 3, breviter bis bipartitis, stigmatibus spiraliter cinctis; placentis bipartitis undique ovuliferis; capsulis immaturis ad 14 mm. longis, alis duabus parvis, tertia triangulari, ascendente, ad 11 mm. lata.

Piura: Prov. Huancabamba, above Palambla, 2,700–2,800 meters, *Weberbauer 6021* (type in Gray Herb.).

Begonia viridiflora A. DC. in Ann. Sci. Nat. sér. 4. 11: 132. 1859.

Shrubby, glabrous. Branches even. Leaves obliquely ovate, acuminate, cordate at base with one lobe broadly rounded and undulate, remotely denticulate, stipules deciduous, lance-ovate, mucronulate, 10 mm. long and 5 mm. wide in the single deformed one known. Peduncle about equaling the leaves, inflorescence dichotomously much-branched. Bracts deciduous, the upper ones elliptic, 3 mm. long. Pedicels 18–24 mm. long. Staminate tepals 2, broadly elliptic, 2 mm. long and 3 mm. wide in the bud. Pistillate tepals 2 (?), narrowly obovate, cuneate. Styles 3, deciduous only at maturity, short-connate, 4–5 mm. long, deeply bifid, the branches subdivided and verrucose toward apex, bearing stigmatic papillae throughout, placentae bilamellate, ovuliferous on all sides. Capsule 12 mm. long, 16–18 mm. wide, subtriangular, obtuse at base, truncate at apex, the largest wing ovate, the other two marginiform, much smaller.

Huánuco: Cuchero, *Poeppig 1063*.

Begonia viridiflora var. **parviflora** Smith & Schubert, var. nov. Tepalis femineis 4–5 mm. longis, roseis; capsula 6–7 mm. longa, alis valde inaequalibus.

Huánuco: Prov. Huánuco, Mirador-Chinchao road, 2,300 meters, *Mexia 04152* (type in Gray Herb.).

EXCLUDED SPECIES

Begonia albomaculata C. DC. in Bol. Mus. Goeldi, 4: 593. 1906, nomen subnudum. From region of Rio Ucayali, Loreto, but description insufficient for identification.

Begonia anemonoides Azara, Voy. 2: 503. 1809, nomen subnudum. Large-flowered species of high altitudes, possibly related to *B. Veitchii*.

Begonia Boissieri A. DC. Cited by the author as: "In Mexico? vel Peruvia?" The specimen is evidently one of the Sessé and Mociño Mexican specimens acquired by Pavón, and is undoubtedly a form of *B. gracilis* HBK.

Begonia Maurandiae A. DC. in DC. Prodr. 15, pt. 1: 279. 1864. Cited from: "Peruvia prope Lloa" from Jameson material. Actually, Lloa is near Quito in Ecuador.

Begonia rubricaulis Hook. Cited by A. DC. as "E Peruvia," but the original description says the origin is unknown and the species now appears to be native of Argentina.

Begonia serotina A. DC. in Ann. Sci. Nat. sér. 4. 11: 121. 1859. Cited from "Guayaquil, Peruviae," which is actually Ecuador.

THYMELAEACEAE

Rather similar to the Lythraceae but the Peruvian species definitely woody and always apetalous or the petals reduced to scales. Leaves usually alternate, entire, estipulate. Flowers, at least those of the Peruvian shrubs, crowded in umbels or heads, these sometimes panicled and few-flowered. Flowers usually hermaphrodite or dioecious, the male at least tubular, with 4–5 imbricate lobes. Stamens in 1 or 2 series, in the former case the same number as the sepals and opposite them, in the latter the second series attached lower and alternate to the others. Petaliferous scales when present are between or just below the upper series of anthers. Disk if present variously developed or of separate scales. Ovary superior, the style often excentric, the cells 1 or 2, 1-ovuled, the ovule pendulous. Seed with or without endosperm.—Domke, Bibl. Bot. 111, 1934, has given a complete and scholarly treatment of the family and the genera.

To this group, largely Mediterranean and African, belongs the delightfully fragrant, often cultivated "Daphne," *Daphne Mezereum* L., source of "Mezereon Bark."

Flowers usually in simple umbels or heads; stamens in 2 series. 1. *Daphnopsis.*

Flowers panicled; stamens 4 in 1 row..... 2. *Schoenobiblus.*

1. DAPHNOPSIS Mart. & Zucc.

Trees or shrubs with alternate leaves and dioecious flowers borne in heads or umbels, the peduncles sometimes branched, usually terminal. Male flowers slender, with 4 spreading lobes. Anthers sessile or nearly so. Ovary minute with 2–4 small scales beneath. Female flowers smaller, often with minute staminodes, the ovary sessile with short thick style and capitate stigma. Seeds without endosperm.—*Lasiadenia* Benth. and *Lophostoma* Meisn., the latter particularly of wide distribution in Brazil and therefore to be expected in Peru, have hermaphodite 5-merous flowers with 10 stamens, the anthers of the former (*L. rupestris* Benth.) subsessile, of the latter with filiform exserted filaments; *L. calophylloides* Meisn. has branched peduncles, the calyx glabrous, *L. ovatum* Meisn., the peduncle bifid, the calyx puberulent.

Peduncles simple.

Pubescence of flowers tomentose, more or less persisting on leaves beneath..... *D. Pavonii.*

Pubescence of flowers sericeous, finally absent from leaves. *D. Weberbaueri.*

Peduncles more or less dichotomously branching..... *D. peruviensis.*

Daphnopsis Pavonii Meisn. in DC. Prodr. 14: 522. 1857.

Branchlets, petioles and leaves beneath (especially the midnerve) and inflorescences softly pubescent with spreading or loosely matted coarse brown trichomes; petioles 2–5 mm. long, some subopposite; leaves oval to elliptic-obovate, rounded at base and apex or slightly emarginate, slightly lustrous but sparsely appressed-strigillose above, 3–7 cm. long, 3–4 cm. wide; peduncles axillary about 3 cm. long, the pedicels 2–4 mm. long; male flowers infundibuliform to nearly 8 mm. long, the ovate obtuse lobes half as long as the tube and tomentulose within; female flowers unknown.—The name "*emarginata* R. & P.," introduced into literature by Gilg, is invalid, as it is based merely on a herbarium name. From as near as Guayaquil is *D. Humboldtii* Meisn. var. (?)*Boissieriana* Meisn., l.c. 521, with oblong leaves 4–4.5 cm. long, 2–2.5 cm. wide, the flower-tube and lobes subequal, the flower sessile. *D. bogotensis* Meisn., l.c., of Colombia to which Peruvian plants have sometimes been referred was described from female flowers only, but these are on peduncles only 6–12 mm. long, the pedicels scarcely 2 mm. long. F.M. Negs. 29665; 35034; 36829 (var.).

Junín: Above Palca, *Ruiz & Pavón*, type.

Daphnopsis peruviensis (Domke) Macbr., comb. nov. *D. caribaea* Griseb. var. *peruviensis* Domke, Notizbl. Bot. Gart. Berlin 12: 727. 1935.

Petioles 5–10 mm. long; leaves obovate-lanceolate, 12–15 cm. long, 3.5–5 cm. wide, long-caudate with acumen 1–1.5 cm. long; lateral nerves at angle of 70°–80°; male flowers sessile, the tube 7 mm. long, the lobes 2 mm. long; female calyx tube 2 mm. long, the lobes half as long; fruit about 6 mm. long.—Description compiled in part from *D. caribaea* of the Lesser Antilles and Margarita species with lateral nerves at angle of 40°. Domke describes, l.c., var. *ecuadoriensis* which I have not seen.

Junín: La Merced, *Weberbauer 1813*, type.

Daphnopsis Weberbaueri Domke, Notizbl. Bot. Gart. Berlin 12: 722. 1935.

Branchlets glabrescent with roundish lenticels, yellowish puberulent toward the tips; leaves oblong-spatulate or obovate or some-

times oblong-elliptic, 3–7 cm. long, 1–3 cm. wide, attenuate to the short (1–2 mm.) petiole, broadly rounded or rarely slightly acute at tip, glabrous at maturity but beneath progressively sericeous-pubescent, puberulent, glabrous; secondary nerves prominent on both sides, the veins reticulate; heads or umbels 10–30-flowered, the peduncles 1–2 cm. long, appressed-subsericeous; male flowers infundibuliform, 6–7 mm. long, 2–3 mm. broad at throat, the pedicels about 1 mm. long, subsericeous without, glabrous within; calyx lobes reflexed(?), triangular ovate, about 2 mm. long, rounded at apex, tomentose as the tube; anthers sessile, broadly elliptic or suborbicular, 0.5–0.7 mm. long, the lower series included; female flowers somewhat urceolate, about 3 mm. long, 2–2.5 mm. broad at the middle, the scales rudimentary; ovary glabrous, rather ovoid, 3 mm. high, 2 mm. broad, rounded at tip, the subglobose stigma exserted; disk nearly lacking.—Differs in character and abundance of pubescence from *D. Pavonii* (Domke). A shrub 2 meters high.

Cajamarca: In evergreen shrubs of 3,200 meters above Namas (*Weberbauer 7217*, male, and *7219*, female, types). Without locality, *Rivero*(?).

2. SCHOENOBIBLUS Mart. & Zucc.

Similar to *Daphnopsis* and with the 4-merous flowers of that group but the calyx tube broadly funnelform, petal-scales lacking and filaments elongate, a portion of them adnate to the calyx. Rudimentary pistil none.

Schoenobiblus peruvianus Standl. Field Mus. Bot. 11: 169. 1936.

Older reddish branches glabrate, the younger hirsute or sometimes nearly glabrous; petiole stout, to 1 cm. long; leaves oblanceolate-oblong or narrowly oblanceolate, 16–30 cm. long, 5–12 cm. wide, abruptly long-acuminate, the acumen narrowly attenuate, gradually attenuate to base and sometimes decurrent nearly to base of petiole, membranous, glabrous and prominently veined above, nearly concolor beneath, sometimes densely hirsute with pale rigid trichomes, these persistent or deciduous; inflorescence to 12 cm. long, long-peduncled, many-flowered, the thick branchlets appressed-pilose or subhirsute as the pedicels, these subumbellate and to 1 cm. long; stamens half as long as the sepals, these white, somewhat unequal, narrowly oblong, obtuse, 5–7 mm. long, dorsally unicostate; fruit suboblique, ovoid, glabrous, 15–18 mm. long, obtusely apiculate. —Probably most nearly related to the Amazonian *S. daphnoides* Mart. & Zucc. with glabrous leaves only to 2.5 cm. wide (Standley).

Small tree to 8 meters high, the slender trunk unbranched for nearly 2 meters, the crown irregular, the bark dark chocolate brown. Uncommon in dense forest often near streams (Williams).

San Martín: Pongo de Cainarachi, *Klug 2692*.—Loreto: Timbuchi, Alto Río Nanay, *Williams 1162*, type. Paraiso, Alto Itaya (*Williams 3354*). Pebas, *Williams 1707; (1878; 1595*). Florida, *Klug 2213* (det. Standl.). Río Puranapura, *Klug 3958*. "Barbasco-caspi," "difarog-gu" (Huitoto).

LYTHRACEAE

Reference: Koehne, Pflanzenreich IV. 216. 1903.

Plants various in habit and duration from annual herbs to trees but always with entire leaves that are usually decussate and flowers that are ordinarily axillary or extra-axillary, rarely racemose or paniculate, the pedicels often bibracteolate. Flowers usually actinomorphic, hermaphrodite, 4–6 (3–16)-merous. Calyx flat to tubular, the lobes mostly valvate, sometimes with alternate appendages. Petals, if present, inserted between the lobes in the calyx throat. Stamens inserted variously in the calyx tube, few (1–6) or many (even to 200 or more), the anthers generally dorsal. Ovary free, incompletely 2–6-celled or rarely 1-celled, the placentae then parietal. Style simple or none, capsule indehiscent or variously dehiscent. Embryo without endosperm.

The Crape Myrtle, "Locura," *Lagerstroemia flos-reginae* Retz. was found cultivated in Iquitos by Williams; it suggests *Physocalymma* in its panicles of showy flowers with conspicuously erose-crisped petals but these are usually six, and the rather small, subsessile leaves are not at all scabrous. Likewise he collected in cultivation the "Amorfino," related to the Locura, *Lawsonia inermis* L., also probably native to Asia or Africa; it has an indehiscent fruit, white or yellowish petals only about 5 mm. long.

Leaves conspicuously black-dotted.....1. *Adenaria*.
Leaves not black-dotted.
Calyx tubular, often narrowly.
Calyx gibbous at base, usually characteristically curved; branches terete.....2. *Cuphea*.
Calyx straight, not at all gibbous; branches quadrate.
3. *Lythrum*.
Calyx campanulate or turbinate.
Herbs, sometimes small.
Small plants, the flowers as capsules scarcely 2 mm. long.
5. *Rotala*.

Erect, often tall, the flowers larger.....4. *Ammannia.*

Shrubs or trees.

Calyx persistent, inflated in fruit, the lobes not at all plicate in bud.....6. *Physocalymma.*

Calyx finally deciduous, strongly plicate and the folds fleshy. 7. *Lafoensia.*

1. ADENARIA HBK.

A shrub or small tree with numerous black dot-like glands on the foliage, calyx and capsule. Leaves opposite, subsessile, oblong-lanceolate, more or less pubescent, especially beneath. Flowers small, yellowish, in axillary, shortly peduncled or sessile pseudo-umbels. Ovary placentae complete, continuous with the style, the calyx persistent about the indehiscent fruit, which, as the ovary, is black-glandular.

Adenaria floribunda HBK. Nov. Gen. & Sp. 6: 188. 1824; 246.

The only species, 2–6 meters high, the wood pale yellow, moderately soft, light and fine-grained.—Calyx is 2.5–5 mm. long, the petioles 1–6 mm. long, the leaves 1.5–4 cm. long, 3–9 mm. broad, narrowed at both ends or obtuse at base; peduncles obsolete to 7 mm. long, as also the pedicels. Several forms of doubtful taxonomic value have been recognized by Koehne.

Piura: River banks, *Weberbauer 3788;* 150.—Cajamarca: Arenales, in clay, 3,000 meters, *Stork & Horton.*—Huánuco: Piedra Grande, *3695.* Pampayacu, *Kanehira 246.*—Junín: Below Huacapistana (Weberbauer, 252).—Ayacucho: Ccarrapa, *Killip & Smith 22373.*—San Martín: Tarapoto, *Spruce 2428;* Lamas, *Williams 6440.* Pongo de Cainarachi, *Klug 2677.*—Loreto: Brea Parina, *Tessmann 5536.* Pongo de Manseriche, *Tessmann 3810.* Florida, *Klug 2224.* Yurimaguas, *Williams 4169.* Pebas, *Williams 1855.*—Puno: Valley of Sandía, *Weberbauer 572;* 237. Bolivia to Brazil and Mexico. "Rumo-caspi," "gurima-ey" (Huitoto), "puca varilla."

2. CUPHEA Adans.

Peruvian species low, slenderly branched shrubs or more or less suffrutescent perennials with brown exfoliating bark, small to medium-sized leaves, and axillary or interpetiolar, shortly pedicelled, red or purplish zygomorphic flowers. Petals usually 6, infrequently 4, 2 or none. Flowers 6-merous, but the dorsal stamens lacking. Placentae interrupted, not continuous with the style, the fruit dehiscing.

At the base of the ovary a disk or gland is often present and usually easy to see if the boiled calyx is opened from the spur; this disk is reflexed or refracted if it appears as a pedicel to the ovary; again it is horizontal and flange-like, less frequently erect or even appressed against the ovary. The best descriptions by Koehne are to be found in Bot. Jahrb. 1 and 2, or, for species occurring in Brazil, in Mart. Fl. Bras. 13, pt. 2.

Besides the following, Koehne proposed a herbarium name for *Weberbauer 5860*, allied to *C. calophylla* C. & S., 115. I did not note the locality, presuming the name was published.

Calyx 15 (13)–20 (30) mm. long.

Calyx conspicuously colored red and green; petals none.
C. speciosa.

Calyx green or reddish, not bicolored; petals usually present, very unequal.

Stamens somewhat exserted.

Leaves slightly reduced into the inflorescence....*C. dipetala.*

Leaves greatly reduced above, bract-like.....*C. cordata.*

Stamens scarcely if at all exserted.....*C. ianthina.*

Calyx rarely 10 (11) mm. long; petals never strikingly unequal.

Flowers axillary or extra-axillary.

Flowers evidently pedicellate, the pedicels, at least some of them, 5 mm. long or longer; disk horizontal; leaves sometimes oblong-linear.

Leaves narrowly oblong-lanceolate-linear, several times longer than broad.

Leaves acute both ends, especially at base...*C. Spruceana.*

Leaves obtuse both ends, even rounded at base.
C. hyssopifolia.

Leaves broader, or much shorter in proportion to width.

Stamens nearly equaling lobes; calyx 10 mm. long.
C. Vargasii.

Stamens not equaling the tube; calyx 5.5–8 mm. long.

Leaves often glandular-ciliate, narrow; disk 3-lobed.
C. ciliata.

Leaves merely scabrous; disk narrower, not 3-lobed.
C. serpyllifolia.

Flowers sessile or apparently, few if any of the pedicels 3 mm. long; disk erect or deflexed or if horizontal the leaves never oblong-linear.

Disk horizontal or tardily refracting, plane above, subglobose beneath, leaves all or many of them 15 (10) mm. long or longer; ovules 6 (4)–12.

Stamens shorter than tube; disk small, spreading. *C. carthagenensis.*

Stamens equaling the tube; disk prominent, refracting. *C. strigulosa.*

Disk erect or if deflexed strongly so and more or less excavated beneath; leaves mostly or all of them shorter than 10 mm. (4–13) or very broadly ovate; ovules 3 (–5).

Disk deflexed; leaves lance-ovate rarely more than a few mm. wide..... *C. gracilis, C. antisyphilitica.*

Disk erect; leaves mostly broadly ovate..... *C. pustulata.*

Flowers in racemes borne above the leaves.

Petals 6; leaves oblong-ovate or ovate.

Pedicels (3) 4–6 mm. long; calyx usually glandular. *C. racemosa.*

Pedicels 1–2 mm. long; calyx rarely glandular..... *C. setosa.*

Petals 2; leaves narrowly oblong.

Petals rounded apically; disk refracted..... *C. bombonasae.*

Petals acuminate; disk erect..... *C. tarapotensis.*

Cuphea antisyphilitica HBK. Nov. Gen. & Sp. 6: 202. 1824; 141.

Small-leaved, sprawling or suberect shrub, the slender stems 2–7 dm. long, strigose-hirtellous and scabrous but not viscid; leaves very acute or acuminate, subcordate or rotundate at base, 7–30 mm. long, 3–4 mm. broad; pedicels 3 mm. long or shorter, bracteolate apically; calyx 5.5–7.5 mm. long, villous within below the stamens but glabrate ventrally; petals purple, the dorsal 2 narrowly cuneate-lanceolate, the 4 ventral narrowly cuneate-oblong; style glabrous or villous below, sometimes finally slightly exserted.—The Peruvian plant has been described as forma *gracillima* Koehne, the calyx 4–4.5 mm. long. F.M. Neg. 17912 (var. ined. *C. serpyllifolia*). Illustrated, Mart. Fl. Bras. 13, pt. 2: *pl. 51.*

San Martín: San Roque, *Williams 7646; 7659* (both distributed as *C. ciliata*). Sandy pampas near Tarapoto, *Ule 6372.* Locality not noted by me, *Weberbauer 5004.* Brazil; Colombia; Venezuela. "Chiagari."

Cuphea bombonasae Sprague, Ann. Bot. 17: 161. *pl. 11.* 1903; 114.

Sprawling-ascending, shrubby, the branchlets toward the tips and the midnerve on both sides somewhat appressed-hispid with dark-colored trichomes; leaves green, paler beneath, minutely and sparsely appressed-strigose, especially above, shortly petioled, acute both ends, lanceolate, 4–7 cm. long, (2) 5–10 mm., usually 7 mm. broad; racemes simple, terminal, ashy-strigillose, at first dense, the caducous bracts rhombic, about 3 mm. long, densely and shortly hispid, minutely round-bracteolate near the base or above the middle; calyx 6 mm. long (pilose within below stamens) the spur scarcely 1 mm. long; petals 2, purple or white, ovate, rounded at tip, half as long as the calyx, the episepalous stamens exserted about one-third, the epipetalous ventral 4 less exserted, the 2 dorsal somewhat shorter than the tube; style pilose, or scarcely so, exserted; disk finally refracted; ovules 6 or 7.—Simulates the normally 6-petaled *C. epilobiifolia* Koehne, 112, of Panama and Central America and probably only a variety with 2 petals, this variation already in the species.

Junín: Pichis Trail, *Killip & Smith 26209*.—Loreto: Pongo de Manseriche, *Tessmann 4302*. Pumayacu, *Klug 3216*.

Cuphea carthagenensis (Jacq.) Macbr. Field Mus. Bot. 8: 124. 1930; 122. *Lythrum carthagenense* Jacq. Stirp. Amer. Hist. 148. 1763. *C. Balsamona* Cham. & Schlecht. Linnaea 2: 363. 1827.

Scabrous-leaved annual or half-shrub, the stems sparsely hispid and minutely strigillose, the former trichomes dark-colored and more or less glandular; leaves shortly petioled, 3–3.5 cm. long, sometimes smaller, usually attenuate at base, obovate to lanceolate-oblong, acute, more or less scabrous or early somewhat strigose, rarely glabrous; pedicels scarcely 1 mm. long, bracteolate apically; calyx 4.5–6 mm. long, sparsely hirsute; petals rose-violet or purple; stamens 11, shorter than the tube, the ventral 9 unequal; disk small, plane above, semiglobose beneath; style glabrous, always included; ovules 4–8; seeds smooth, narrowly winged.—Illustrated, Mart. Fl. Bras. 13, pt. 2: *pl. 45*.

Peru (surely). Widely distributed.

Cuphea ciliata R. & P. Prodr. 66. 1794; Syst. 120. 1798; 118. *C. microphylla* HBK. Nov. Gen. & Sp. 6: 201. 1824. *C. loxensis* HBK. l.c. 200.

Subdecumbent or sprawling shrub resembling vegetatively *C. antisyphilitica* and *C. gracilis* but usually minutely viscid-hirtellous and with fruiting pedicels mostly 5 mm. long or longer; leaves sub-

sessile, oblong to linear-lanceolate, 5–13 (16) mm. long, 1.5–5 mm. broad, often glandular-ciliate and viscid-puberulent or glabrous, rigid-coriaceous; pedicels 3–9 mm. long, bracteolate apically; calyx 6–8 mm. long, dark violet, densely hirtellous or viscid-hispidulous; petals deep purple or violet; disk horizontal, broader than ovary, 3-lobed; style glabrous or slightly villous above, always included; ovules 8–10.—The 11 stamens are shorter than the tube. Often common on grassy or partly shrubby slopes. Illustrated, Koehne, l.c. 119.

Piura: Ayavaca, *Bonpland.*—Cajamarca: Cutervo, *Jelski 311* (det. Szyszyl.).—Huánuco: Southeast of Huánuco, *2094.* Mito, *1414.* Between Huánuco and Pampayacu, *Kanehira 283.* Huánuco, *Dombey 792; 793.*—Junín: Pillao, *Ruiz & Pavón,* type. Uspachaca, *1308.*—San Martín: Between Pacasmayo and Moyobamba, *Stuebel 42d, 44a, 49b.*—Cuzco: Convención, *Vargas 828* (det. Standl.). Yucay, *Soukup 904.*—Amazonas: Chachapoyas, *Williams 7559.* Ecuador. "Hierba de la culebra," "culibrilla," "yerba de culebra."

Cuphea cordata R. & P. Prodr. 66. *pl. 11.* 1794; Syst. 119. 1798; Fl. Peruv. 4: *pl. 404.* 1802; 177.

Shrub, the bark exfoliating on the older stems; leaves ovate-lanceolate, often acuminate, 1–6.5 cm. long, 3–40 mm. broad, typically lustrous above, usually acuminate and subcoriaceous; stems toward the tips more or less glandular pubescent; flowers conspicuous, bright red, the reddish calyces 17–23 mm. long, dorsally biwinged within, densely hirtellous and viscid-puberulent, on pedicels 4–10 mm. long, interpetiolar, bracteolate below the apex; petals 6, the 2 dorsal much larger, rounded or ovate-elliptic; stamens semi-exserted, 11; disk ovate, cordate, fleshy, deflexed; ovules 10–30, usually 14; style finally long-exserted.—Weberbauer, 101, remarks that this may be the most frequent shrub of the eastern Andes between 1,800–2,500 meters. It usually grows in sunny thickets where its lax branches find partial support. Illustrated, Bot. Mag. *pl. 4208.*

Huánuco: Chaglla, *3653.* Pampayacu, *Kanehira 279; Sawada 342.* Acomayo, *Ruiz & Pavón.* On the Río Huallaga, *Spruce 4591,* part.—Junín: Pillao, *Ruiz & Pavón.* Huacapistana, *Killip & Smith 24178; 24451.* Huasahuasi, *Dombey.* Tarma, 2,500 meters, *Weberbauer 1780;* 247.—Ayacucho: Ccarrapa, *Killip & Smith 22413.* Pampalca, 3,200 meters, *Killip & Smith 22223.*—San Martín: Moyobamba, *Raimondi.*—Cuzco: Cerro de Cusilluyoc, *Pennell 14087.* Without locality, *Gay.* Machupinchu, 2,400 meters, *Herrera 1970.*

—Puno: Valley of Sandía, 2,300 meters, *Weberbauer 522;* 238. Colombia; Bolivia.

Cuphea dipetala (L.f.) Koehne, Bot. Jahrb. 2: 422. 1882; 177. *Lythrum dipetalum* L. f. Suppl. 250. 1781. *C. verticillata* HBK. Nov. Gen. & Sp. 6: 207. *pl. 552.* 1824.

Similar to *C. cordata* but the inflorescence very leafy, the pedicels sometimes extra-axillary, the stems often densely glandular-pubescent, the flowers and calyces violet and, especially, the two dorsal petals large, nearly equaling or slightly shorter than the tube, the 4 ventral 1.5–3.5 mm. long, sometimes lacking; ovules 12–22, usually 17–19.—Illustrated, Fl. Serres 6: *pl. 540.*

Puno: Tabina, *Lechler 1865; Soukup 523.*—Cuzco: Prov. Convención, bush 1 meter high among shrubs and grasses, 1,750 meters, *Mexia 8054* (det. Bacig.). Paucartambo, *Vargas 42* (distr. as *C. cordata*). Without locality, *Bonpland.* "Yahuar-choncca."

Cuphea gracilis HBK. Nov. Gen. & Sp. 6: 199. 1824; 140.

Distinguished from *C. antisyphilitica* by the linear or narrowly lanceolate merely acutish leaves, and the reddish violet or white obovate or obovate-oblong petals.—The Peruvian form is var. *minor* Koehne, the leaves 4–15 mm. long, 1–3 mm. wide, the calyx 4–4.5 mm. long, ashy-strigose like the stems and branches. Doubtfully distinct from *C. antisyphilitica* unless in the shape of the petals and this character alone is scarcely more than a varietal difference; cf. the drawings in Fl. Bras. l.c. Illustrated, Mart. Fl. Bras. 13, pt. 2: *pl. 51.*

San Martín: Moyobamba, 1,000 meters (*Weberbauer 4622*). Brazil to Colombia and British Guiana.

Cuphea hyssopifolia HBK. Nov. Gen. & Sp. 6: 199. 1824; 127.

Similar to *C. Spruceana* but the leaves obtuse at both ends; calyx glabrous or with a few stiff trichomes; style sometimes slightly villous; ovules 5–8, mostly 6.—Illustrated, Koehne, l.c. 127 (flowers and leaves).

Peru (probably). Chile; Ecuador; Colombia; North America.

Cuphea ianthina Koehne in Mart. Fl. Bras. 13, pt. 2: 238. 1877; 177.

Half shrub more or less glandular pubescent, the ascending stems several dm. long; leaves ovate, often subcordate at base, subsessile, usually about 2 cm. long, half as broad, finely setulose and above with some scattered longer setae; pedicels 3–15 mm. long, bracte-

olate medially or higher; calyx about 15 mm. long; petals usually 6, the dorsal sometimes even as long as the tube; style finally exserted; ovules 9–14 (–18).—Variable; cf. Koehne for named forms.

Puno: Slopes of Limbani, 3,400 meters, *Vargas 9660*.—Cuzco: Urubamba Valley, *Herrera*. Bolivia. "Llinqui-llinqui."

Cuphea pustulata Koehne in Mart. Fl. Bras. 13, pt. 2: 224. 1877; 118.

Related to *C. ciliata* but leaves ovate or ovate-oblong, 10–18 mm. long, 7–10 mm. wide, calyx only 5 mm. long, pedicels 1–2 mm. long, petals violet, vesicles obvious below the stamens and, especially, the disk erect or suberect and nearly half as long as the glabrous ovary, this at least equaled by the glabrous style.

San Martín: Lamas Mountains near Tarapoto, *Spruce*. Without locality, (*Mathews 1984*). Tarapoto, *Williams 5393; 5492*. Lamas, *Williams 6479*.

Cuphea racemosa (L.f.) Spreng. Syst. 2: 455. 1825; 104. *Lythrum racemosum* L. f. Suppl. 250. 1781. *C. spicata* Cav. Icon. 4: 56. *pl. 381*. 1797.

A slender herbaceous or suffrutescent viscid-hirsute species with ovate-elliptic leaves, these usually 2–5 cm. long, 1–3.5 cm. broad, acute at each end, glabrous or nearly so except for the scabrous margins; flowers in elongate racemes, on slender pedicels 3–6 mm. long, the pink petals about half as long as the usually glandular hirtellous calyx, this 5.5–10 mm. long; pedicels usually with a roundish bract about 1.5 mm. long at base; disk horizontal, ovate or narrowly oblong; style villous, finally exserted.—Species unmistakable except for *C. origanifolia* C. & S., possibly occurring, but which has an erect or semi-erect gland at the base of the ovary (Bacigalupi). Illustrated, Mart. Fl. Bras. 13, pt. 2: *pl. 41*.

Lima: Canta, *Née*.—San Martín: Near Moyobamba, *Klug 3487* (det. Standl.). San Roque, *Williams 7231; 7163*.—Loreto: Pongo de Manseriche, *Tessmann 4398*. Río Santiago, *Mexia 6160* (det. Standl.). South America, to Mexico and Cuba. "Hierba del fraile."

Cuphea serpyllifolia HBK. Nov. Gen. & Sp. 6: 201. *pl. 550*. 1824; 118.

Closely allied to *C. ciliata* from which it differs chiefly in its much broader leaves with merely scabrous margins, the leaves 4–13 mm. long, 3–6 mm. broad, thus broadly ovate or ovate-oblong, rounded or subcordate at base, acute; pedicels to 13 mm. long;

calyx 5.5–7 mm. long, cylindrical in fruit, shortly glandular-hispidulous; disk ovate or orbicular, carinate-convex beneath; ovules 6–10.—Used as a remedy for diarrhoea.

Cajamarca: San Pablo, 2,400 meters, *Weberbauer 3843;* 257. Cuzco: *Gay, 656; 665; 1046.* Urubamba Valley, *Herrera.* Colombia; Venezuela. "Hierba del toro."

Cuphea setosa Koehne in Mart. Fl. Bras. 13, pt. 2: 223. 1877; 110.

A perennial herb in general resembling *C. racemosa,* but the pedicels much shorter, these only 1–2 mm. long, bibracteolate at base, the bractlets minute; leaves to 7.5 cm. long, appressed-hirsute, sometimes glabrate; racemes bracted, the ciliate bracts 1–5 mm. long; calyx 4–6 mm. long, more or less hirtellous or hispid, rather long-spurred, the spur subascending; petals six, violet; disk lanceolate, base ascending, but acutely refracted at the middle.—Illustrated (flower), Koehne, l.c. 111.

Puno: San Gabán, *Lechler 2322.*—Cuzco: *Gay 1087; 669* (det. Bacigalupi). Bolivia to Mexico and Tobago.

Cuphea speciosa (Anders.) Kuntze, Rev. Gen. 3, pt. 2: 96. 1898; 159. *Melvilla speciosa* Anders. Journ. Sci. 25: 207. 1807.

A shrub 1–2 meters high, the slender virgate or subscandent branches terminating in dense bracted racemes of showy red and green calyces, these 2–3 cm. long, strigose puberulent and usually glandular hirtellous, borne on pedicels 3–11 mm. long, bracteolate below the middle or near the base; petals none; stamens longer or little exserted, 11.—If the name *C. speciosa* Hort. (cf. Koehne) is accepted as in conflict this plant must be called *C. Melvilla* Lindl. Bot. Reg. 10: *pl. 852.* 1824. Illustrated (flower), Koehne, l.c. 159.

Amazonas: Nazareth, *Osgood 11.*—Loreto: Puerto de Neuvo York, (*Huber 1582*). Iquitos, *Williams 8027; Mexia 6390.* Near Yurimaguas, *Klug 2803.* Between Urarinas and San Regis on the Marañón, *Poeppig.* Pró, *Williams 1976.* Caballo-Cocha, *Williams 2302.* Río Itaya, *Williams 48.* Río Nanay, *Williams 467.* Pebas, *Williams 1873.* Widely distributed, South America. "Bosquesito."

Cuphea Spruceana Koehne in Mart. Fl. Bras. 13, pt. 2: 226. 1877; 128.

A low shrub with sessile or subsessile, glabrous or nearly glabrous, oblong-linear or linear-lanceolate leaves, to 7 mm. wide, 1–3 cm. long; flowers pink, axillary, on apically bracteolate pedicels 5–9 mm. long; calyx minutely and sparsely hirtellous, 7–8 mm. long; stamens

and tube subequal; style glabrous; ovules 10–14; seeds obtusely or retusely margined.—Flowers white and yellow (Klug). F.M. Neg. 21926.

San Martín: Juanjuí, *Klug 4375*. Chazutu, *Klug 4819*.—Junín: Río Perené, *Killip & Smith 25147*.—Loreto: Yurimaguas, *Poeppig; Spruce 4591*, type. Pongo de Manseriche, *Mexia 6156; 6155* (det. Standl.); *Tessmann 4839*. Bolivia.

Cuphea strigulosa HBK. Nov. Gen. & Sp. 6: 204. 1824; 123. *C. strigulosa* HBK. subsp. *opaca* Koehne in Mart. Fl. Bras. 13, pt. 2: 257. 1877.

A small shrub with medium-sized scabrous leaves (1) 2–3 (4) cm. long and axillary subsessile pink flowers; stems usually more or less hirsute; leaves somewhat petiolate; pedicels 1–2 mm. long, bracteolate toward the tip; calyx 6–8 mm. long, strigillose or very shortly hirtellous and hispidulous, villous within below the stamens, the oblong roseate or violet petals half as long; infrastaminal vesicles none; stamens usually shorter than the tube; disk plane above, semiglobose beneath; ovules 6–8 (–12); seeds margined.—Var. *Sinclairii* Koehne, pedicels 2.5–4 mm. long, is Ecuadorian.—Nearly *C. carthagenensis*, to which some of the following collections could perhaps be referred, but apparently they all have the slightly different disk and longer stamens of the HBK. species.

San Martín: Moyobamba, *Mathews 1632; Klug 3274; 3444* (both distr. as *C. carthagenensis*). Chazuta, *Klug 4072* (distr. as *C. carthagenensis*). San Roque, *Williams 6967; 7062; 7690*. Lamas, *Williams 6478*. Tarapoto, *Williams 6774*. To Trinidad and Colombia.

Cuphea tarapotensis Sprague, Ann. Bot. 17: 160. *pl. 11*. 1903; 114.

A little shrub 2–5 dm. high, closely allied to *C. bombonasae* but the disk erect, cylindrical; bracts broadly ovate, long and densely setose-ciliate, densely strigose beneath; pedicels axillary; petals 2 or in some flowers 3 or 4; ovary villous dorsally, otherwise glabrate; disk about one-half as long as the ovary, oblong, subcomplanate; ovules 6–8; seeds 1.3 mm. long and broad.—Description from Koehne based on the Ule specimen.

San Martín: Tarapoto (*Spruce*, type).—Loreto: San Antonio, *Ule 6755* (det. Koehne).

Cuphea Vargasii Macbr., spec. nov.

Fruticulosa 3–10 dm. alta; caulibus base procumbento-adscendentibus demum ut videtur suberectis, flexuosis, parce ramosis

mediocriter foliosis plus minusve glanduloso-setulosis et minute strigillosis; petiolis vix 1 mm. longis; foliis ovatis vel ovato-lanceolatis base subcordatis, apice acutis vel breviter acuminatis; plerumque 17–20 mm. longis, circa 10 mm. latis, superioribus paullo reductis, supra sparse setulosis, nervis vix notatis, subtus minute scabrido-hispidulis, nervis prominentibus; pedicellis ad 6 mm. longis, apice bibracteolatis; calycibus 10 mm. longis, fere cylindraceis haud bilabiatis, obscure vel vix calcaratis minutissime strigillosis et sparse glanduloso-hispidulis, intus infra staminibus glabris; staminibus 11, 9 aequalibus fere exsertis; petalis subaequalibus late obovatis 3.5–4.5 mm. longis; ovario 2.5 mm. longo, stylo 3 mm. longo glabro incluso; ovulis 8 (9); disco suberecto subgloboso distincte 3-lobato vel 3 rotundato-carinato; seminibus fere orbiculatis, 2 mm. longis, 1.75 mm. latis, fusco-marginatis, exalatis.—In some important characters this species approaches *C. calophylla* C. & S. of eastern Brazil; its disk is somewhat similar to that of *C. ciliata*, to which it is probably allied. Flowers red-lavender or violet-purple; old plants with long, slender, naked woody stems (collectors).

Apurímac: Between Abancay and Aurpury, 2,600 meters, *Stork, Horton & Vargas, 10589*, type. Sunny hillside among boulders, 1 km. east of Abancay, 2,400 meters, *Stork, Horton & Vargas 10558*.

3. LYTHRUM L.

Smooth-barked slender herbs or sometimes somewhat suffrutescent toward the base. Stems or branches often wand-like, the leaves ascending, the calyces closely appressed. Flowers solitary, axillary or in terminal spikes.

Lythrum maritimum HBK. Nov. Gen. & Sp. 6: 194. 1824; 69.

More or less suffrutescent plant with rather small axillary roseate purple flowers; leaves 7–33 mm. long, 2–14 mm. broad, obtuse or rounded at base; calyx 5–8 mm. long, the petals somewhat shorter; stamens 6, subequaling the style at anthesis, the latter 2 times shorter than or about equaling the ovary that is narrowly annulate at base.—The annual or short-lived *L. hyssopifolia* L., 65, the ovary eannulate, the stamens usually 4–6, called "Romerillo" in Chile, has been reported but probably by error; the similar but perennial European species, *L. flexuosum* Lag., 68, with brachystylous flowers, 12 stamens, may be found as an introduction. Illustrated, Mart. Fl. Bras. 13, pt. 2: *pl. 39*.

Lima: In the river bed at Callao, and Lima (*Wilkes Exped.*). Chanchai, *Dombey.* Without locality, *Ruiz & Pavón.*—Tacna: A shrub more than 1 meter high, *Shepard 280* (det. Johnston); *Werderman 710.*—Apurímac: Curahuasi, *Vargas 9610; 1211.* Uruguay and Argentina to Chile and Colombia.

Lythrum Salicaria L. Sp. Pl. 446. 1753; 73.

Inflorescence a long, interrupted spike, the clustered flowers large, magenta-colored; calyx 4–8 mm. long, the lobes usually half as long as the tube, the petals much longer than the calyx.—The single record known for South America is based on a poor specimen and doubtless represents a casual introduction.

Piura: Pisacoma (according to Koehne). Widely introduced from Europe.

4. AMMANNIA [Houston] L.

The Peruvian species are smooth, erect herbs 2 dm. to 1 meter high, with linear-lanceolate, oblong, closely sessile leaves and small, green or red, sessile flowers that are solitary or clustered in the leaf-axis. Petals none. Ovary 2–4-celled. Capsule globose or ellipsoid, papyraceous, irregularly dehiscing transversally, the septae not at all striate. Bractlets whitish, fertile.

Ammannia latifolia L. Sp. Pl. 119. 1753; 50.

Leaves 2–8 cm. long, 2–15 mm. broad; calyx lobes obsolete; petals none; style very short.—Wet or cultivated ground.

Lima: Callao, *Gaudichaud 141.* In the river bed at Callao (*Wilkes Exped.*). Chancai, *Ruiz & Pavón.* Brazil to southeastern United States. "Crab-weed," "yerba de cancer."

Ammannia coccinea Rottb. Pl. Hort. Univ. Havn. Progr. Descr. 7. 1773; 49.

Similar to the preceding but, especially, the leaves always auricled at base, the calyx lobes obvious and the style one-half to two times as long as the ovary.—*A. auriculata* Willd. found as near as Guayaquil by Ruiz & Pavón, is similar, but the flowers are mostly long pedicellate.

Cajamarca: *Raimondi.* Nearly cosmopolitan.

5. ROTALA L.

Glabrous herbs closely allied to *Ammannia,* but the partitions of the septicidal capsules densely and elegantly horizontally striate and the bractlets sterile.

Rotala ramosior (L.) Koehne in Mart. Fl. Bras. 13, pt. 2: 194. *pl. 39*. 1877; 32. *Ammannia ramosior* L. Sp. Pl. 120. 1753.

Stems 1-several dm. long, quadrate, often ascending and branched; leaves 1–4 cm. long, 2–11 mm. broad, somewhat attenuate to the short petiole; bractlets usually equaling or half as long as the calyx, this becoming 4–5 mm. long, the lobes equaled or slightly exceeded by the white or roseate petals.

Loreto: Caballo-Cocha, *Williams 2299*. North and South America; Philippine Islands.

6. PHYSOCALYMMA Pohl

A tree with widely spreading branches, decussate leaves and showy flowers borne in panicled racemes. Flowers 8–9-merous; calyx subglobose-turbinate, about 16-striate, vesicular and persistent in fruit. Petals crenate-undulate. Stamens 24–28.—The tree was long supposed to be the source of tulip-wood, or rose-wood, of Brazil, which now is known to be obtained from a leguminous tree; compare Record & Mell, Timbers of Tropical America 288, 455. 1924. According to these authors, the somewhat pinkish wood suggests that of maple or birch, but is not suitable for cabinet work.

Physocalymma scaberrimum Pohl, Flora 10: 153. 1827; 210. *P. floridum* Pohl, Pl. Bras. Ic. 1: 100. *pls. 82–83*. 1827.

A beautiful tree 5–25 meters high, with scabrous leaves, coriaceous, lustrous, several to 10 cm. long, 3–6 cm. wide, and bright purple-red flowers, the rhombic petals about 16 mm. long and broad.

Loreto: Near Yurimaguas, *Poeppig 2077; Williams 3882; 4025; Killip & Smith 27551*.—Junín: On river bluff, La Merced, *5398*. Colonia Perené, *Killip & Smith 24975*. Chanchamayo Valley, *Schunke 432*. Bolivia; Brazil. "Huianava," "huainuma."

7. LAFOENSIA Vand.

Calyplectus R. & P. Prodr. 73. 1794.

Very much like *Physocalymma* but glabrous, the few large flowers borne in dense subpaniculate racemes, the campanulate or semiglobose calyx coriaceous, its limb remarkably plicate, finally deciduous. Stamens 16–32. Capsule indurate.—Named in honor of Joannis de Braganza, Duke of Lafoens in the early eighteenth century. A native name is "chusma."

A beautiful yellow dye is obtained from two South-American species, *L. pacari* St. Hil. and *L. punicaefolia* DC.

Lafoensia acuminata (R. & P.) DC. Mém. Soc. Phys. Hist. Nat. Genève 3, pt. 2: 73. 1826; 218. *Calyplectus acuminatus* R. & P. Syst. 129. 1798. *L. speciosa* (HBK.) DC. l.c., at least as to Peru.

Branches terete; leaves 5–10 cm. long, nearly half as broad, oblong or obovate-oblong with many subhorizontal nerves that are equally prominent both sides, 3–4 mm. apart; leaf-pore apparently lacking (in true *L. speciosa* of Colombia it is present); pedicels 18–23 mm. long, terete or subcompressed dorsally, the axis raceme 4-angled; calyx 2 cm. long; flowers 14-merous; pod spherical, according to Ruiz & Pavón radiately stellate from the middle to the apex. —The sap stains the skin (Rimbach). F.M. Neg. 17918.

Huánuco: Pozuzo, *Ruiz & Pavón.*—Amazonas: Chachapoyas, *Mathews* (referred to *L. speciosa* by Koehne).—Cajamarca: Cutervo, *Weberbauer 7132.* Bolivia? Ecuador. "Amarillo," "pocól," "chuspo," "cabeza de monge."

Lafoensia punicaefolia [Bert.] DC. Mém. Soc. Phys. Hist. Nat. Genève 3, pt. 2: 86. *pl. 1.* 1826; 218.

Branches early angulate; leaves rather light coriaceous, oblong-lanceolate, 5–8 cm. long, 2–2.5 cm. wide, acute at slender petiole, more or less abruptly and bluntly acuminate-caudate; leaf-pore small; pedicels 2–4 cm. long, the inflorescence sometimes a simple raceme; flowers 12–16-merous; calyx 3–4 cm. long, campanulate but pyriformly contracted below the middle; petals about 3 cm. long, the filaments 12 cm. long; capsule apiculate-ovoid.—A tree about 15 meters high; flowers flesh-red and yellow (Klug), this collection apparently somewhat larger than typical; it was given an herbarium name by Standley and may indeed be distinct from the species of DeCandolle, originally from Central America but more material is needed upon which to base it. The name has been written "*punicifolia.*"

San Martín: Juanjuí, 400–800 meters, *Klug 4327.* Bolivia (fide Koehne) to Venezuela and Guatemala.

RHIZOPHORACEAE. Mangrove Family

Trees or shrubs with usually opposite, stipulate, more or less coriaceous leaves and hermaphrodite flowers borne in axillary inflorescences. Stipules united between the petioles, soon deciduous. Calyx tube adnate in *Rhizophora,* free in *Cassipourea,* the persistent lobes valvate. Petals often lobed or fringed, convolute or inflexed

in bud, the stamens usually many, often opposite to the petals in pairs, inserted on a lobed disk. Ovules usually 2 pendent from near the tip of the 2–5(6) cells.

Strangely enough the Mangrove so conspicuously fringing most tropical shores that are muddy seems to be unrecorded from Peru; Weberbauer does not mention it, but for that matter the related family Combretaceae is omitted by him. However the Mangrove seems really to be absent, probably from the lack along the Peruvian coast of the muddy flats and estuaries that elsewhere it so often characteristically fills with its curved prop-roots. Apart from its habit, *Rhizophora Mangle* L. may be known, if found, by the forked flower-peduncles, the cupulate-bracted calyx, the inferior ovary, not to mention the remarkable perforation of the fruit—that persists on the tree—by the radicle of the embryo, the elongate club-like radicle then descending into the mud.

CASSIPOUREA Aublet

Reference: Alston, Kew Bull. 241–276. 1925.

Smooth with entire or somewhat toothed leaves and white or yellowish flowers usually clustered and more or less pediceled, the pedicels with minute bractlets at their base. Petals 4–5, thickly fringed. Stamens 10–40 on the disk margin, this with as many lobes. Fruit somewhat fleshy, tardily dehiscent septicidally with 1 ariled seed in each of the 3–4 cells.

Cassipourea peruviana Alston, l.c. 268. *C. Ulei* Briq. Candollea 4: 347. 1931. *C. Poeppigii* Briq. l.c. 349. *C. elliptica* var. *dentata* Engler in Mart. Fl. Bras. 12, pt. 2: 430. 1876.

A tree, the slender branchlets slightly pubescent toward the tips or glabrate; petioles 3–8 mm. long; leaves lanceolate to broadly elliptic, somewhat rounded to the shortly cuneate base, more or less acuminate, entire or obscurely and remotely denticulate, often 1–1.5 dm. long, 4–6 cm. wide, often smaller, glabrous or a little pilose at first on the midrib; stipules 3–5 mm. long; flowers few to several; pedicels 6 (5) mm. long, apically articulate, distinctly but sometimes rather sparsely short-hirsutulous or pilose; calyx broadly campanulate, glabrous or with a few to a number of appressed trichomes, the 5 lobes densely sericeous within; petals to about 10 mm. long, densely fringed; stamens about 20, exserted; ovary 3-celled, with the style appressed strigose.—*G. guianensis* Aubl., 269, and *C. Spruceana* Benth., 270, both known from the Amazon Valley,

have sessile or subsessile flowers, the former with petioled leaves and the calyx without somewhat pilose, the latter with subsessile, slightly cordate leaves, the calyx without glabrous. Although at one time I thought to distinguish *C. Poeppigii* and so named two of the collections cited, it seems to me now, with a larger series of specimens at hand, that there is no fundamental distinction and that there is only one species concerned, somewhat variable in leaf size and form and in pubescence and length of pedicels. *C. Ulei* may be a local variety, the leaves to 3 cm. wide. F.M. Negs. 23233; 23235.

San Martín: Along the Río Mayo near Tarapoto, *Spruce 4005*, type.—Loreto: Yurimaguas, *Poeppig 2088; 2234* (the latter type, *C. Poeppigii*). Florida, Río Putumayo, *Klug 2124; 2290; 2235; 2167* (all det. Standl.). Mishuyacu near Iquitos, *Klug 1219; 455*.—Río Acre: Cobija, *Ule 9638* (type, *C. Ulei*). "Eto sima-ey," "jamoro-ey," "farocano-ey" (Huitoto).

COMBRETACEAE

Reference: Eichler in Mart. Fl. Bras. 14, pt. 2. 77–127. 1867.

Trees, shrubs or lianas with usually opposite leaves and no stipules. Flowers most often hermaphrodite, racemose or spicate, sometimes capitately. Calyx tube adnate, the 4–5 (6–8) lobes usually valvate. Petals 4–5 or wanting, often scarcely obvious, the stamens as many to twice as many or more, inserted on the calyx, the filaments inflexed in bud. Anthers versatile, opening by slits. Stigma simple or rarely 4-lobed, the ovary 1-celled, the 2–6 ovules funicularly suspended from the top of the cell. Fruit often winged, drupe-like.—Nearly Rhizophoraceae as to technical character but often well-marked in appearance of flowers and inflorescence; the ovary in Rhizophoraceae 1-celled only by disappearance of the partitions. The expression "calyx tube" or "receptacle" refers here to the tube containing the inferior ovary and to its prolongation with the calyx lobes, these often forming 2 parts, more or less distinctly, the former being the "lower" the latter the "upper."

Quisqualis indica L., cultivated generally in the tropics, has been collected at Iquitos; the style is adnate to the calyx tube, this often 5 cm. long or longer and topped by the spreading rose or scarlet petals that are about 1 cm. long; the appearance of the flower is apocynaceous.

Besides the reference cited above I wish to acknowledge my indebtedness to the work of A. W Exell on the family, particularly in Pulle's Flora Surinam 3: 164–177. 1935.

Calyx tube sericeous and with 2 minute bractlets near top. 1. *Laguncularia.*

Calyx tube ebracteolate.

Leaves opposite; petals present, small.....2. *Combretum.*

Leaves alternate or verticillately crowded; petals wanting.

Anthers versatile.....3. *Terminalia.*

Anthers fixed to the filament tip.....4. *Buchenavia.*

1. LAGUNCULARIA Gaertn. f.

Shrub or tree with leathery, opposite oblong-elliptic leaves that are scarcely veined. Flowers mostly hermaphrodite in axillary spikes. Calyx tube only slightly extended above the ovary, obscurely bibracteolate near the tip, 5-parted, persisting. Petals 5, soon caducous. Stamens included or only barely exserted.

Laguncularia racemosa (L.) Gaertn. f. Fruct. 3: 209. *pl. 217.* 1805; 102. *Conocarpus racemosa* L. Syst. ed. 10. 930. 1759.

Petioles to 2 cm. long, biglandular near the tip; calyx tube 3–6 mm. long, gray-puberulent, crowned by the persistent calyx.—The Peruvian collection with longer leaves than usual was described as forma *longifolia* Macbr. The shrub usually is associated with the Mangrove but if the latter was with it, unfortunately it was not collected; cf. remarks under Rhizophoraceae.

Tumbez: Tumbez near the sea, Mangrove formation, *Weberbauer 7627,* type, forma. Tropical America and Africa.

2. COMBRETUM L.

Shrubs, usually scandent, sometimes trees, the leaves entire and opposite or rarely whorled, the flowers borne in spikes that are often paniculate. Petals small, inserted between the calyx lobes. Style free from the upper receptacle. Fruit 4–6-angled or membranous-winged and then suggesting that of some Sapindaceae.

The species, at present at least, seem to be scarcely distinguishable in fruit or only by comparison.

Flowers 5-merous, red, borne in greatly elongating spikes. *C. Cacoucia.*

Flowers 4-merous.

Flowers small, the stamens 2–3 mm. long.....*C. laxum.*

Flowers large, spicate, the stamens 10 mm. long or longer.

Petals suborbicular; calyx abruptly short-campanulate above, densely red-lepidote.....*C. assimile.*

Petals elliptic to linear.

Calyx abruptly contracted about medially into an upper and lower portion.....*C. fruticosum.*

Calyx infundibuliform or subcylindrical, obscurely if at all divided, that is, the upper portion rather gradually attenuate below.

Petals narrowly elliptic; calyx lobes little longer, 2–3 (5) mm. long.

Calyx tubular-campanulate.....*C. Basslerianum.*

Calyx infundibuliform.....*C. rotundifolium.*

Petals nearly linear; calyx lobes much longer, 5–6 mm. long. *C. Llewelyni.*

Combretum assimile Eichler in Mart. Fl. Bras. 14, pt. 2: 109. 1867.

Branchlets, calyx tube and rachis densely red-lepidote; leaves ovate-elliptic, obtuse or rounded at base, obtusely acuminate, ample, subcoriaceous, glabrous and lustrous above, rather sparsely yellowish-red lepidote beneath; lateral nerves prominent beneath, usually 7 or 8 and often 2 or 3 of them much closer together than the rest; petals orbicular-ovate, acute, shorter than the ovate calyx lobes, these yellow-villous within; fruit lightly reddish scurfy, nearly 4 cm. wide and 3.5 cm. long.—F.M. Neg. 19655. Illustrated (flower), l.c. *pl. 34.*

Loreto: Near Yurimaguas, *Klug 2785* (det. Standl.). Mouth of Santiago, *Tessmann 4567; 3824.*—Río Acre: *Ule 9663; Krukoff 5698.* Brazil.

Combretum Basslerianum Mildbr. Notizbl. Bot. Gart. Berlin 9: 143. 1924.

Slender-stemmed liana, the petioles 3–5 mm. long, the leaves narrowly ovate or elliptic, obtuse at base, gradually acuminate, 6–11 cm. long, 2.5–4.5 cm. wide, glabrous above, pale yellow lepidote but not densely so beneath, where the 7–10 lateral nerves are prominent; terminal spikes secund, dense, 6–8 cm. long, the rachis and ovaries densely brown-purple lepidote; receptacles narrowly campanulate, manifestly constricted at the insertion of the filaments, 11 mm. long with lobes, 7 mm. wide between them, these 3–4 mm. wide, 2 mm. long, within (as lobes) densely lanate; petals scarcely 2 mm. long,

1 mm. wide, lance-elliptic; filaments 2.5 cm. long, the anthers scarcely 2 mm. long; immature fruit densely lepidote, undulate-winged, 2 cm. long, half as wide.—Near *C. secundum* (*C. fruticosum*) but receptacle longer and with an upper and lower part, i.e. not gradually dilated. Named for Dr. Bassler, leader of the Amazonian Expedition on which Tessmann made his important Peruvian collections. F.M. Neg. 23221.

Loreto: Yarino Cocha, *Tessmann 3208*, type.

Combretum Cacoucia (Baillon) Exell, Kew Bull. 469. 1931; 122. *Terminalia Cacoucia* Baillon, Hist. Pl. 6: 275. 1877. *Cacoucia coccinea* Aubl. Pl. Guian. 1: 450. 1775, not *Combretum coccinea* Lam.

Shrub or liana with broadly elliptic leaves (to 1 dm. broad), little lepidote and usually pentamerous linear-bracteate flowers; spikes sometimes even 5 dm. long, the rachis and calyx tube softly tomentose-puberulent, the upper part to 10 mm. long and 6–9 mm. wide, nearly closed by the annular margin of the pronounced disk; fruit 5-ridged.—Poisonous seeds used for destroying rats. Illustrated, Mart. Fl. Bras. 14, pt. 2: *pl. 32*.

Peru (probably, at least in cultivation). Brazil to Central America.

Combretum fruticosum (Loefl.) Stuntz, U. S. Dept. Agric. Bur. Pl. Ind. Seeds & Pl. Imp. 31: 86. 1914; 110. *Gaura fruticosa* Loefl. Iter Hispan. 248. 1758; German ed. 320. 1766; *C. laxum* Loefl. l.c. 320, in syn., 396, with description. *C. secundum* Jacq. Sel. Stirp. Amer. Hist. 1: 103. 1763; 110. *C. oxypetalum* G. Don, Trans. Linn. Soc. 15: 420. 1827. *C. Loeflingii* Eichler in Mart. Fl. Bras. 14, pt. 2: 110. 1867.

Scandent or diffuse shrub; leaves beneath and rachis and calyces densely yellow lepidote; leaves gradually acuminate, rather chartaceous, evenly nerved; upper calyx tube campanulate, 5–7 mm. long, the ovate lobes subequaled by or little longer than the lanceolate petals, at most 2 mm. long; fruit nearly orbicular, glabrate or somewhat scurfy lepidote, often red-tinged, about 2 cm. long.—The larger leaves are about 15 cm. long and half as wide; stamens about 3 cm. long. Flowers yellow and red. It is possible that the name of Jacquin represents a distinct plant. Some of the specimens cited here have fruits 3 cm. wide, 2.5 cm. high.

Huánuco: Chicoplaya, *Ruiz & Pavón*. Shapajillo, 630 meters, *Woytkowski 39*.—San Martín: Tarapoto, *Spruce 3969* (det. Taub.). Pongo de Cainarachi, *Klug 2608* (det. Standl.). Chazuta, *Klug*

4118. Juanjuí, *Klug 4325.*—Junín: La Merced, *5318*(?) (fruit).—Loreto: Maynas, *Poeppig.* Cachipuerto near Balsapuerto, *Klug 3130* (det. Standl.). Pebas, *Isern 2269; 2268.*—Cuzco(?): *Gay.*—Río Acre: *Ule 9664.* Mexico to West Indies, Paraguay, and Argentina.

Combretum laxum Jacq. Enum. Pl. Carib. 19. 1760; 115. *C. Jacquini* Griseb. Fl. Brit. W. Ind. 275. 1864. *C. obtusifolium* Rich. Act. Soc. Hist. Nat. Paris 1: 108. 1792, fide Exell. *C. puberum* Rich. l.c., fide Exell. *C. odoratum* R. & P. ex G. Don, Trans. Linn. Soc. 15: 430. 1827.

Highly variable species as to foliage but marked by the small fragrant flowers borne in axillary or terminal panicles; leaves glabrous and not lepidote but sometimes with a minute surface indument or puncticulation, this most rarely impressed; upper part of calyx tube cup-like, 1–2 mm. high, glabrous or pubescent; petals broad, exceeding the calyx lobes; fruit oblong to suborbicular, ridged to winged.—It is possible that with more material the species as interpreted by Eichler can be shown to be in reality several. Amazonian forms of this affinity include *C. Sprucei* Eichler, 115, completely glabrous and distinctive by the thick quadrate-oblong, narrowly winged fruits to about 3 cm. long; *C. laurifolium* Mart., 117, the fruit bipyramidate-tetragonous, attenuate at base, narrowly winged, glabrous; *C. nitidum* Spruce 118, the fruit glabrous, subrotund, only 7–8 mm. wide, sessile; *C. phaeocarpum* Mart., 118, the fruit sessile, about 16 mm. long, half as wide, rounded at base, rusty-tomentose. More distinctive, perhaps, is *C. brevistylum* Eichler, 118, the inflorescence hirsutulous with bright brown, spreading trichomes, the style shorter than the stamens. The Ecuadorian *C. Pavonii* G. Don has leaves softly rusty or ashy-pilose beneath, the flowers remote. F.M. Negs. 7888 (*puberum*); 7890 (*obtusifolium*); 23226 (*odoratum*). Illustrated, flower, l.c. *pl. 34.*

San Martín: Juanjuí, *Klug 4183.*—Loreto: Near Yurimaguas, *Klug 2780* (det. Standl.). Balsapuerto, *Klug 3068* (det. Standl.). Florida, Río Putumayo, *Klug 2237* (det. Standl.). Ucayali, *Tessmann 3365; 3075*(?). Iquitos, *Ule 6870; Tessmann 5034; 3698; Williams 1379; Klug 1253.* Soledad, *Tessmann 5205; 5176.* Manfinfa, *Williams 1136.* Upper Río Nanay, *Williams 1195.*—Río Acre: *Ule 9665; Krukoff 5460; 5727.* Argentina to Mexico and the West Indies. "Aioho-ayo-o" (Huitoto), "escobilla."

Combretum Llewelyni Macbr. Field Mus. Bot. 11: 31. 1931.

Probably scandent shrub, the branchlets, petioles and leaves

beneath sparingly rufo-lepidote; petioles to 5 mm. long; leaves glabrous above, lustrous-subchartaceous, broadly elliptic or nearly subrotund, abruptly caudate-acuminate, 8–10 cm. long, 5 cm. wide; lateral nerves 6–7, prominent beneath, curved at the margins and with the veins rather reticulate; terminal spikes about 2 dm. long; calyx 17 mm. long, reddish-lepidote, narrowly campanulate from base, scarcely or not at all constricted, the narrowly triangular lobes rarely 3 mm. wide at base, 5–6 mm. long, acuminate, sparsely lanate within; petals nearly linear, 2 mm. long; stamens about twice as long as the calyx; fruit unknown.—Approaching *C. fruticosum* and *C. Basslerianum* but calyces longer, more narrowly toothed, the petals narrower, the leaves broader. Nearly *C. rotundifolium* but perhaps separable on the basis of the narrow petals.

Loreto: Along the Río Itaya, *Williams 143*, type.

Combretum rotundifolium Rich. Act. Soc. Hist. Nat. Paris 1: 108. 1792; 109. *C. Aubletii* DC. Prodr. 3: 19. 1828.

With the red-lepidote calyces of *C. assimile* but the calyx tube longer and the upper part more nearly cylindrical; leaves more densely yellow-red lepidote; lateral nerves apparently always about equally remote; disk well developed with pilose border; petals 2 mm. long, half as wide, elliptic; fruit oblong to suborbicular, 2–3 cm. long, 1.5–3 cm. broad, 4-winged, lepidote.—Illustrated (flower), l.c. *pl. 34*. F.M. Neg. 7892.

Loreto: Pampa del Sacramento, *Castelnau* (det. Exell). To Venezuela and Guiana.

3. TERMINALIA L.

Shrubs or trees, the leaves usually obovate, long attenuate to the petioles and characteristically clustered at the ends of the branchlets. Flowers small, usually spicate, petals lacking. Upper part of calyx tube deeply 4–5-lobed, soon falling. Stamens 8 or 10 in two series, the lower opposite the calyx lobes. Fruit long-ovoid, deeply angled or 2–5-winged.—*Ramatuella* HBK. with the flowers and fruits in subglobose heads, the fruits trapezoid, rostrate, medially 4–5-winged, the wings rigid, may be found—either *R. argentea* HBK., 99, the leaves ashy sericeous beneath, or *R. virens* Spruce, 100, the leaves glabrous. Brandis included the genus in *Terminalia* but so far as known the fruits are distinctive.

The Asiatic tree *T. Catappa* L. has been collected in cultivation on the lower Río Huallaga, and at Caballo-Cocha as "Castaña" and

"Almendra"; the leaves are much larger than those of the native species, attaining at least a dm. in width; it is the Indian almond or Tropical almond of horticulture; the ovoid angular drupe known as "Myrobalans" is edible, has a filbert-like flavor and yields an oil.

Leaves mostly about 3.5 cm.; fruits about 1 cm. wide with 4–5 wings, 2 larger than the others.....*T. amazonica.*

Leaves often to 5 or 6 cm. wide; fruits about 3.5 cm. wide, with only 2 wide-spreading wings.....*T. oblonga, T. tarapotensis.*

Terminalia amazonia (J. F. Gmel.) Exell in Pulle, Fl. Surinam 3: 173. 1935; 91. *Chuncoa amazonica* J. F. Gmel. in L. Syst. Nat. ed. 13. 2: 702. 1791. *Gimbernatea obovata* R. & P. Prodr. 138. 1794. *Chuncoa obovata* (R. & P.) Pers. Syn. 1: 486. 1805. *T. obovata* (R. & P.) Steud. Nomencl. ed. 2. 2: 668. 1841.

A tree, the branchlets and inflorescences as the younger leaves more or less reddish pilose or strigose; leaves typically obovate with a short, broad, very blunt point, glabrate, 6–8 cm. long, 3.5 cm. wide, often smaller, tapering at base to the short, slender petiole; flowers rather remote, about 2.5 mm. wide, the stamens well-exserted; fruit wings 4–5 mm. long or shorter, nearly as wide as the fruit, with wings 10–11 mm. wide.—To 20 meters high with extremely hard wood much valued for construction (Ruiz & Pavón). F.M. Neg. 29283.

Huánuco: Cuchero & Macora, *Ruiz & Pavón*, type.—San Martín: Tarapoto, *Spruce 4909*.—Loreto: Balsapuerto, *Klug 3107*. North to Mexico and Trinidad. "Arbol del chunchu," "chuncho."

Terminalia oblonga (R. & P.) Eichler in Mart. Fl. Bras. 14, pt. 2: 90. 1867. *Gimbernatia oblonga* R. & P. Prodr. 138. 1794. *Chuncoa oblonga* (R. & P.) Pers. Syn. 1: 486. 1805.

Glabrous tree or the rachis of the spikes finely strigose; leaves typically elliptic-oval, apically rounded or shortly and bluntly acute, 8–9 cm. long, 5–6 cm. wide, sometimes narrower, the stout petioles 2–5 mm. long, the blades obscurely biglandular, moderately veiny, subchartaceous; fruits lustrous, the wings 15 mm. long, or longer, about as wide, ovate, rounded, the fruiting rachis typically smooth.—To 15 meters high, or higher. Illustrated (fruit), Eichler l.c. *pl. 33*. F.M. Neg. 29282.

Huánuco: Pozuzo, *Ruiz & Pavón*, type.—San Martín: Tarapoto, *Spruce 4587* (det. Eichler).—Río Acre: *Krukoff 5641*.

Terminalia tarapotensis Heurck & M. Arg. Obs. Bot. 213. 1871.

Branchlet tips and rachi reddish strigose pubescent; petioles to 1 cm. long; leaves rather few, broadly obovate, shortly and obtusely acuminate or acute, acute at base, often 10–12 cm. long, 4–8 cm. wide, glabrous at maturity, distinctly veined, somewhat lustrous, eglandular but with some pellucid dots near the margin, subcoriaceous; disk shortly hispid, the villous style and glabrous stamens well-exserted, equally long.—Doubtfully distinct from *T. oblonga*, known in fruit. The Tessmann fruiting specimen has fruits 4 cm. wide, 2.5 cm. long. In all probability there is only one species. F.M. Neg. 23231.

San Martín: Tarapoto, *Spruce 4570*, type.—Loreto: Pongo Manseriche, *Tessmann 3573;* probably also *4014*.

4. BUCHENAVIA Eichler

With the facies in general of *Terminalia*. Branchlets often obviously enlarged at the tips, the leaves frequently biglandular at base. Flowers hermaphrodite and male, the two sorts irregularly mixed on the same spike, this sometimes subcapitate. Calyx tube above broadly cup-like, subentire or somewhat toothed. Fruit a more or less fleshy drupe, pointed, angled.—Genus apparently chiefly represented in the Amazon Valley; cf. Ducke, Archiv. Jard. Bot. Río Jan. 4: 148–151. 1925 and Archiv. Inst. Biol. Veg. Río Jan. 2: 63–65. 1935, for additions to the eight species known to Eichler.

Leaves sparsely red-villous beneath with long trichomes, pellucid-punctate ..... *B. punctata.*

Leaves glabrous beneath at least on surface or sparsely puberulent, not obviously punctate.

Leaves about 1.5 dm. long; inflorescence pubescence brownish-gray ..... *B. macrophylla.*

Leaves much smaller; inflorescence pubescence reddish. *B. oxycarpa.*

Buchenavia macrophylla [Spruce] Eichler in Mart. Fl. Bras. 14, pt. 2: 98. 1867.

Branchlets nodose; petioles to about 1 cm. long; leaves oblong-obovate, acute at the rounded tip, biglandular at the shortly attenuate base, slightly lustrous both sides, paler beneath, membranous, the venation slender; spikes subsessile, more or less ashy or brownish tomentose; ovary neck and calyx glabrous; stamens all exserted an equal distance but barely so, the short style scarcely exceeding the villous disk.—A 7-meter tree, 6 cm. in diameter (Tessmann). Herbarium name by Spruce under *Terminalia*. F.M. Neg. 21768.

San Martín: Tarapoto, *Spruce 2507*, type.—Loreto: Soledad, *Tessmann 5259* (vel aff., Mildbraed).

Buchenavia oxycarpa [Mart.] Eichler, l.c. 97.

Tree, glabrous except for the rusty pubescent rachi and sometimes also for the ovary, this tomentulose, and the calyces, these pubescent; branchlets slender, often verticillate, as the crowded leaves; petioles 4–12 mm. long, plane above; leaves obovate to oblanceolate, rounded or obtusely acuminate, cuneate or attenuate at the somewhat glandular base, subcoriaceous, rather dull, distinctly venose both sides, 5–10 cm. long, 2.5–3.5 cm. wide; flowers spicate, 4–6 mm. broad, glabrous except the villous disk, the style scarcely exserted from this, the alternate stamens included; drupe oblong, acuminate, 5-angled, shining, under 2.5 cm. long.—To 30 meters high, some 20 meters to the first branch (Tessmann). Name by Martius in herbaria under *Terminalia*. Illustrated, Eichler l.c. *pl. 25*.

Loreto: Soledad, *Tessmann 5165*. Brazil to British Guiana.

Buchenavia punctata [Spruce] Eichler, l.c. 98.

More densely pubescent than the somewhat similar *B. macrophylla*, the branchlets much enlarged at tips and crowned by fascicles of obovate leaves, these brown-pilose on the petioles and nerves; leaves acute or obtuse, long attenuate to the eglandular petiole, opaque, rather firm, 7–10 cm. long, 2.5 cm. wide or wider, the slender reticulate venation prominent beneath; drupes about 1.5 cm. thick.—Name in herbaria by Spruce under *Terminalia*. F.M. Neg. 14335.

San Martín: Tarapoto, *Spruce 4945*, type.

LECYTHIDACEAE

Knuth, Pflanzenreich IV. 219a. 1939.

Usually tall trees, the leaves often large, ovate or oblong, entire or crenulate-serrate, alternate. Stipules none. Flowers sometimes solitary, more often racemose or paniculate, the inflorescence axillary, terminal or borne directly on the branches. Flowers hermaphrodite. Calyx 4- or 6-lobed, the lower part connate with the ovary into a receptacle, the lobes imbricate. Petals free, rarely none, 6, 4 or sometimes 8, often large. Androphorum colored, frequently extended laterally into a long more or less valericuliform appendage. Stamens many, frequently borne separately and modified into staminodia. Ovary usually 2–6-celled, the ovules 1 to several in each cell. Style obsolete or short. Fruit characteristically a pyxidium, the lower portion often more or less enlarged by the remains of the sepals,

the upper provided with an operculum that is often connate with the central column and not rarely woody.

Family noteworthy as the source of Brazil nuts, *Bertholletia excelsa*, native to the Amazon, but scarcely appearing within Peru unless cultivated. A number of species, particularly those of *Gustavia*, furnish wood highly prized for construction.

Androphorum semiglobose; column of the fruit dehiscing with the mesocarp; seeds funiculate.

Anthers linear; petals 6–8.....1. *Gustavia.*

Anthers short; petals 4.....2. *Grias.*

Androphorum manifestly bilateral.

Androphorum urceolate-campanulate, oblique but without tongue; operculum joined with the woody column.....3. *Cariniana.*

Androphorum laterally with an elongate galericulate appendage.

Processes of the appendage and annulus anther-bearing and similar.....4. *Couroupita.*

Processes of the appendage more or less destitute of anthers, those of the annulus much larger.

Seeds long funiculate; style rather long; fruit 4-celled. 5. *Lecythis.*

Seeds sessile or nearly; style short.....6. *Eschweilera.*

Androphorum laterally with spirally incurved appendage. 7. *Couratari.*

1. GUSTAVIA L.

Trees or tall shrubs with ample, crowded, entire or more or less serrate, often spathulate leaves and axillary or terminal flowers sometimes corymbosely congested, their pedicels medially, basally or rarely apically bracteolate. Calyx obovate, the limb 4–6-lobed or sometimes nearly truncate. Petals 6–8, about equal. Androphorum nearly globose, with numerous multiseriate processes, often dilated, attached to the inner face, the anthers linear, basifixed, finally opening apically by a pore. Ovary inferior, 6- or occasionally 4-celled. Fruit globose, with 6 seeds in each cell, suspended especially from the upper part of the placenta column by long, thick funiculae.—Species as recognized, very finely drawn, the key, accordingly, only suggestive. Genus named in honor of the Swedish king Gustav III.

Calyx lobes developed, broadly triangular.

Petals oblong-obovate, 10–15 mm. broad.

Petals 8, 3.5 cm. long.....*G. iquitosensis.*

Petals 6 (7), 2–2.5 cm. long ..... *G. hexapetala.*

Petals broadly obovate, finally 3 cm. wide or wider. . *G. brasiliana.*

Calyx lobes obsolete or depressed; if obvious only 1–2 mm. high, the calyx limb often annulate, thick.

Petals about 8, 2.5 (–3) cm. long, only 10–12 mm. wide.

Pedicels about 2 cm. long; leaves slightly puberulent. *G. longifolia.*

Pedicels 3–4 cm. long; leaves glabrous ..... *G. mangua.*

Petals 4 (3.5) –6 cm. long, broadly obovate except *G. Tessmannii.*

Leaves glabrous.

Leaves acute at base or decurrent on the more or less developed petiole.

Petals about 6 cm. long.

Leaves more or less serrulate ..... *G. augusta.*

Leaves subentire ..... *G. Mexiana.*

Petals 3.5–4.5 (5) cm. long.

Petals broadly obovate.

Petals about 10, 4–5 cm. long; pedicels 2–3 cm. long. *G. calycaris.*

Petals about 8, 3.5–4 cm. long; pedicels 2–6 cm. long. *G. speciosa.*

Petals oblong-spatulate, 1.5 cm. broad. . . . *G. Tessmannii.*

Leaves narrowed to a truncate or retuse base. *G. Poeppigiana.*

Leaves puberulent beneath ..... *G. pubescens.*

Gustavia augusta L. Amoen. Acad. 8: 266. *pl. 5.* 1775; 16. Branchlets at their densely leafy tips 5–6 mm. thick; leaves oblanceolate, 17 cm. long, 5.5 cm. broad, often much larger, narrowed at each end for about a quarter of their length, the base wing-decurrent into a petiole 1 cm. long, the tip acutish, the margin above the middle more or less serrulate, firm papyraceous, dull green, glabrous, the nerves 1–2 cm. distant; inflorescence terminal, 4-flowered, the pedicels 2–4 cm. long, bibracteolate above the middle; calyx undulately lobed; petals to 6.5 cm. long, 3.5 cm. broad, white, the androphorum 4 cm. across, the anthers 3 mm. long; fruit globose, 5.5 cm. thick, turbinate at base, truncate; seeds 2.5 cm. long, 1.5 cm. broad.—In writing *augusta* (not *angusta* as often quoted) Linné

thoughtfully completed the name for this beautiful plant in honor of his king, Gustav III. Illustrated, Knuth, l.c. 17. *fig. 6.*

Loreto: Pampa del Sacramento, *Castelnau* (det. Benoist). Brazil to the Guianas.

Gustavia brasiliana DC. Prodr. 3: 290. 1828; 19.

Branchlets at the foliose tips 5 mm. thick; petioles obsolete or scarcely 1 cm. long, winged; leaves oblong-lanceolate or broader, to 23 cm. long, 8 cm. broad, contracted toward the acute tip and cuneately narrowed about a third from the base, entire or slightly undulate margined, firm papyraceous, greenish, glabrous, the nerves 14–17 mm. distant; inflorescence terminal, 4–5-flowered, the rather stout pruinose tomentulose pedicels bibracteolate near the middle; calyx lobes 6, broadly triangular, acute, coriaceous; petals 6, white, obovate, to (4) 6 cm. long, finally 3–4 cm. broad, retusely rounded; androphorum 2.5–3 cm. broad; fruit narrowly 6-winged, 4 cm. across.—Known to attain 7 meters. *G. microcarpa* Pilger, l.c. 20, probably extending into eastern Peru from Brazil, has the pedicels bibracteolate below the tip. Illustrated, Mart. Fl. Bras. 14, pt. 1: *pl. 7.*

Río Acre: Mouth of Río Macauhán, *Krukoff 5695* (det. Knuth). Brazil.

Gustavia calycaris (Berg) Miers, Trans. Linn. Soc. 30: 185. 1874; 20. *G. augusta* L. var. *calycaris* Berg in Mart. Fl. Bras. 14, pt. 1: 471. 1858.

A shrub-tree 5–6 meters high, the young branchlets brownish-gray, rugulose; petioles 8–12 mm. long; leaves oblong-lanceolate, 2.5–3.5 dm. long, 5–9 cm. broad, constricted at apex into an acute acumen, gradually narrowed to base, nearly entire or undulate-sinuate, rigid-chartaceous, green and opaque above, slightly paler beneath; racemes axillary, 6.5 cm. long, the fragrant roseate flowers as many as 10, 9 cm. broad, borne on pedicels 2–3 cm. long, that bear 2 linear acute bractlets about 7 mm. long a little below their tips; calyx limb subquadrate, the broad lobes rotate, as much as 2.25 mm. high, pruinose both sides; petals about 10, strongly imbricate, ovate-oblong, fleshy, 4–5 cm. long, 2 cm. broad, grayish opaque and pulverulent both sides; androphorum white; ovary turbinate, brown-tomentose, 4-celled, the style short, conical.

San Martín: San Roque, *Williams 6549.*—Loreto: La Victoria, *Williams 3165.* Caballo-Cocha, *Williams 2502.* Brazil.

Gustavia hexapetala (Aubl.) Smith in Rees, Cycl. 17: no. 2. 1811; 19. *Pirigara hexapetala* Aubl. Pl. Guian. 1: 490. *pl. 193*. 1775.

Branchlet-tips slender, 4 mm. thick; leaves mostly 12–14 cm. long, 5–6 cm. broad, suddenly contracted to the acute or obtuse apex, gradually narrowed from the upper third to the decurrently winged petiole, this 1–2 cm. long, entire or serrate-undulate, papyraceous, glaucous-green, the nerves 12–15 mm. remote; inflorescence terminal, shortly cymose, 1–4-flowered, the peduncle lacking; pedicels to 2.5 cm. long, 2 mm. thick, with 2 broad ovate bractlets at the middle; calyx strongly 6-costate, the acutish triangular lobes 5–6 mm. long, 5 mm. wide at base; petals 2–2.5 cm. long, 10–12 mm. broad; androphorum 1.5–2 cm. broad; fruit globose, 6-winged, the wings more or less crisped.—Said to attain 8 meters. Illustrated, Bot. Mag. *pl. 5239*.

Río Acre: *Ule 9653*. Brazil to the Guianas.

Gustavia iquitosensis Knuth, Repert. Sp. Nov. 35: 338. 1934; 24.

Slender tree with oblong-spatulate leaves, the larger 4–5 dm. long, 13–17 cm. broad, obtuse, narrowed to the base from within one-fifth of the tip, the base itself subretuse, the margin entire or somewhat undulate, papyraceous, glabrous, the nerves nearly 2 to 2.5 cm. distant; flowers solitary, the 8 spatulate petals 3.5 cm. long, 12 mm. broad, 6–7 mm. broad near the base, rounded at apex; calyx lobes 4, more or less triquetrous, 6 mm. long and broad; androphorum yellowish, 3 cm. in diameter, the processes carmine; anthers 2.5 mm. long, 1–1.25 mm. broad.—The petioles and receptacle somewhat tinged with red, the petals pale at base, deep carmine above. The type was 2 meters high, not branched, the trunk 1.5 cm. thick. *G. Ulei* Pilger, of adjacent Brazil, has glaucous leaves, flowers about 3, subsessile, the petals 6, white or rose as the androphorum.

Loreto: Iquitos, *Tessmann 3645*, type.

Gustavia longifolia Poeppig ex Berg, Linnaea 27: 442. 1854; 24.

A nearly simple or scarcely branching tree 2 meters high with spatulate leaves 3–6 dm. long, 12.5–20 cm. broad at the middle, obtusely acute, 2–3.5 cm. broad at the base, coarsely serrulate, firm papyraceous, ashy-green above, minutely puberulent beneath, subsessile; inflorescence 1–4-flowered, borne on the older stems or from the lower leaf-axils; pedicels puberulent, 17–24 mm. long, with 2 minute ovate bractlets below the middle; calyx nearly entire or

3–4-lobed, the lobes 5 mm. broad, 1.5 mm. high; petals 8, obversely oblong, to 2.5 cm. long, 12 mm. broad, greenish-purple; androphorum 12 mm. long; receptacle 8 mm. long, puberulent, 4-celled, the cells many-ovuled; fruit globose, 5 cm. broad, red, with 3–4 seeds.—F.M. Neg. 31635.

Loreto: Yurimaguas, *Poeppig 2094*, type. Lower Río Huallaga, *Williams 3926*. Balsapuerto, *Killip & Smith 28564*.

Gustavia mangua Macbr. Field Mus. Bot. 11: 29. 1931; 20.

Petioles 5–10 mm. long; leaves oblong-lanceolate, 3–4 dm. long, 6–8 cm. broad, narrowly produced at apex into an acute acumen, gradually narrowed toward the acute base, subentire or remotely crenulate-serrulate, crisply plicate, rigid chartaceous, glabrous, the slender straw-colored nerves prominent beneath; flowers many, in racemes 2.5 cm. long, bracts numerous, ovate-acute, 3 mm. long; pedicels slender, minutely pulverulent, bibracteolate a little below the middle, 3–3.5 cm. long; calyx limb entire, obsoletely 4-lobed; petals about 8, oblong-obovate, nearly 2.5 cm. long, 7–10 mm. broad, pulverulent.

Loreto: Lower Río Nanay, *Williams 281*, type. Mouth of Santiago, *Mexia 6228a* (det. Standl.). "Sacha manga," "mangua."

Gustavia Mexiana Knuth, Pflanzenreich IV. 219a: 136. 1939.

A tree 6 meters high, the ultimate branchlets 6 mm. thick, glabrous; leaves often more or less verticillately congested, lanceolate, to 16 cm. long, 4 cm. broad, gradually narrowed to the acute apex, narrowly cuneate at base where passing into the very narrowly winged petiole 1 cm. long, firm papyraceous, the margin minutely denticulate or subentire; lateral nerves 12–14, slender and with the midrib prominent; calyx limb annulate, petals to 6 cm. long, 2.5–3 cm. broad, rounded, glabrous, whitish; androphorum 4 cm. broad; receptacle 1.5 cm. long, 1 cm. broad, turboid.—The tough wood is used for tool handles and hoops (Mexia).

Loreto: Iquitos, *Mexia 6517*, type. "Chopé."

Gustavia Poeppigiana Berg, Linnaea 27: 442. 1854; 25. *G. caballoensis* Macbr. Field Mus. Bot. 11: 28. 1931, fide Knuth.

Young branchlets 7 mm. thick; leaves sessile, oblanceolate, about 33 cm. long, 11 cm. broad, more or less abruptly contracted at the acutish apex, narrowed from the upper third gradually to the retuse base, coarsely denticulate-serrate, papyraceous, green, glaucous, glabrous, the nerves 2 cm. distant; inflorescence (as to type) terminal,

about 3-flowered, the peduncle obsolete, the pedicels to 1.5 cm. long, with 1 broad, caducous bract near the base; calyx lobes obsolete, the limb annulate; petals 6–8, obovate, somewhat retuse, 4 cm. long, 2 cm. broad, apparently white; androphorum 3 cm. broad.—In *G. caballoensis* the flowers are axillary, solitary, but the character may not be significant. Berg recognized 3 forms, their names descriptive of the leaf-variation: var. *opaca;* var. *nitens;* var. *rigida*. *G. conferta* (Berg) Miers, Amazonian, is similar but the leaves are only 6–7.5 cm. broad, gradually acuminate, and the pedicels 2–2.5 cm. long, bibracteolate above the middle. F.M. Neg. 31637.

Loreto: Yurimaguas, *Ule 6302; Killip & Smith 28908*. Upper Río Itaya, *Williams 3406; 3519*. Iquitos, *Klug 350*. Caballo-Cocha, *Williams 2152; 2240* (type, *G. caballoensis*). Brazil. "Chope."

Gustavia pubescens R. & P. Fl. Peruv. 4: 306. *pl. 351*. 1802; 24.

Leaves elongate-oblanceolate, to 8 dm. long, 18 cm. broad, contracted at the nearly mucronate apex, gradually narrowed from the upper third to the more or less rounded base, the margin serrate-crenulate or crenulate, papyraceous, glabrous above, softly tomentose beneath but at maturity only on the nerves, net-veined, the lateral nerves 13–17 mm. distant; inflorescence unknown; petals broadly obovate, about 6 cm. long, 3.5 cm. broad; androphorum 5 cm. broad, the process 18 mm. long.—The type is from Guayaquil. Cf. *G. Ruiziana*, mentioned under *G. speciosa*.

Loreto: Lower Río Huallaga, *Williams 3941*. Ecuador. "Membrillo de monte."

Gustavia speciosa (HBK.) DC. Prodr. 3: 289. 1828; 22. *Pirigara speciosa* HBK. Nov. Gen. & Sp. 7: 262. 1825.

A tree, the ultimate branchlet about 7 mm. thick, glabrous except for the more or less evanescently tomentulose pedicels and calyces; petioles short or to 3 cm. long, 2.25 mm. thick; leaves elongate-oblanceolate, usually 3–4.5 dm. long, 8.5 cm. broad, acutish, gradually narrowed and cuneate into the petiole, entire or remotely serrulate, firm or chartaceo-papyraceous, glaucous-green, the nerves 1.5 cm. distant; inflorescence sessile or nearly, contracted-racemose, 3–10-flowered, the pedicels 2–6 cm. long, to 3.5 mm. thick, medially bracteolate and with 1 deciduous bract at base; calyx subglobose, 7–8 mm. broad, 3–6 mm. long; petals rotund-obovate, 3.5 cm. long, white within, pale rose without; androphorum 3.5 mm. broad, the processes yellow.—*G. Ruiziana* Berg, the type from Guayaquil, has

leaves densely puberulent beneath, petals to 6 cm. long. F.M. Negs. 38305; 29401 (*Ruiziana*).

San Martín: Tarapoto, *Williams 5646; Klug 3900.*—Loreto: Middle Ucayali, *Tessmann 3410.* Iquitos, *Tessmann 3676;* and several other collections. Brazil; Colombia. "Chupa."

Gustavia Tessmannii Knuth, Repert. Sp. Nov. 35: 338. 1934; 28.

A nearly simple tree 1.5–6 meters high, the young branchlets 1.5–2 cm. thick; petioles stout, often 5 cm. long, 7 mm. across; leaves spatulate, to 7.5 dm. long and 22 cm. broad, acutish or obtusish, from about the upper fourth narrowed to the base into the petiole, the margin entire or scarcely undulate, firm papyraceous, green, glabrous, the nerves 2–3 cm. remote; inflorescence short, 2–3-flowered, borne on the older wood, the pedicels 5–10 cm. long, their medial bractlets 2 mm. high; calyx limb annulate; petals 8, spatulate-oblong, 4.5 cm. long, 1.5 cm. broad, 6–8 mm. wide at base, white, roseate toward the rounded apex; androphorum 3 cm. broad, the processes 1.5 cm. long; anthers 2.5 mm. long, 1–1.25 mm. broad.—*G. Duckei* Knuth, similar, has serrulate leaves, the inflorescence rachis 7 cm. long, with many bracts; *G. Spruceana* has leaves 10–13 cm. broad, pedicels 3 cm. long; *G. laciniosa* Miers is marked by the laciniately serrate leaves, nearly those of *G. superba* (HBK.) Berg, but this with puberulent pedicels—all species to be expected.

Loreto: Mouth of Santiago, *Tessmann 4574,* type. Puerto Melendez, *Tessmann 4728.* Umbria, dist. Putumayo, *Klug 1880.*

2. GRIAS L.

Tall trees with large leaves crowded together at the tips of the branches and shortly pediceled or subsessile flowers borne in close corymbs on the old wood. Technically similar to *Gustavia* but the petals always 4, spreading, fleshy, and the small anthers with a subapical short cleft.

The fleshy part of the fruit (mesocarp) of *G. peruviana* and other species is said to be eaten, a common name being "membrillo."

Pedicels slender, 3–4 cm. long, 1.5–2 mm. thick.

Leaves entire; rachis 1–2 cm. long.....*G. Tessmannii.*

Leaves undulate-serrate; rachis 6–12 cm. long..*G. maranonensis.*

Pedicels shorter, stout.

Rachis of inflorescence 6–12 cm. long; leaves entire.

G. Neuberthii.

Rachis 1–1.5 cm. long.

Leaves subentire.....*G. grandifolia.*

Leaves remotely undulate-serrate.....*G. peruviana.*

Grias grandifolia Pilger, Notizbl. Bot. Gart. Berlin 9: 142. 1924; 31.

A tree 10–15 meters high, the trunk to 6 dm. thick; leaves sessile, lanceolate linear, to 12 dm. long or longer and 2 dm. broad, narrowed toward the acute apex and gradually toward the base, entire, glabrous; flowers 6–8, congested on the trunk, to 6 cm. long, the rachis 1 cm. long; bractlets triangular or broader, acutish or rotund, 4–6 mm. long, nearly as wide; pedicels 7–17 mm. long, 2 mm. thick; receptacle glabrous, 7 mm. long; calyx limb 4-lobed, the lobes finally broadly triangular or often none; petals rather broadly ovate, 23 mm. long, glabrous, pale yellow; processes about 10–14 mm. long; anthers rotund, 1 cm. long.—The Colombian *G. Haughtii* Knuth has only about 3 flowers, the peduncle obsolete. Illustrated (fruit), Knuth, l.c. 6. F.M. Neg. 29165.

Loreto: Masisea, *Tessmann 3110*, type. Puerto Limón, *Tessmann 3864*. Iquitos, *Williams 1355*.

Grias maranonensis Knuth, Repert. Sp. Nov. 35: 339. 1934; 30.

A small tree 4 meters high; leaves narrowly lanceolate, often 8–10 dm. long, 24 cm. broad, more or less contracted at the acute tip, narrowed at base to a petiole often 9 cm. long, 6–8 mm. across, glabrous, the margin remotely undulate-serrulate, the nerves to 4 cm. distant, slender but prominent beneath; flowers as many as 15, more or less racemose, the inflorescence to 14 cm. long; bractlets to 8 mm. long, very acute; pedicels 3–4 cm. long, 1.5–2 mm. thick; calyx limb entire or obscurely 4-lobed; petals 2–2.5 cm. long, glabrous, ochroleucous; processes 12–14 mm. long; anthers 1 mm. broad.—Allied to *G. Tessmannii* but the petioles much stouter, the inflorescence longer.

Loreto: Perseveranza, Marañón (*Kuhlmann 21501*, type).

Grias Neuberthii Macbr. Field Mus. Bot. 11: 30. 1931; 31. *G. loretensis* Knuth, Repert. Sp. Nov. 35: 339. 1934.

A tree 13–15 meters high; leaves narrowly lanceolate with the petiole often 9 dm. long, 17 cm. broad, rather abruptly contracted at the acute apex, gradually narrowed into the slightly winged petiole, this to 2 dm. long; leaf blades lightly revolute, entire, glabrous, firm-papyraceous, the nerves often 3 cm. distant, slender, distinctly marked below, the veins little conspicuous; flowers about

5, more or less racemose, the inflorescence to 16 cm. long, the rachis sericeous; bractlets to 13 mm. long, acute, chartaceous; pedicels not distinct from the receptacle and with it 13 mm. long, 2.5 mm. across at base, stout, slenderly sericeous as the calyx, the persistent lobes of the latter ovate obtuse, 10 mm. long, 7 mm. broad, thin; petals unequal, often 28 mm. long, 15 mm. broad, chartaceous, glabrous, yellow; processes 10–12 mm. long; anthers 1 mm. broad.—Pulp surrounding the seeds is edible (Mexia). Name in memory of Carl Neuberth, long custodian of the herbarium, Field Museum. Illustrated, Knuth, l.c. 32.

Loreto: Caballo-Cocha, *Williams 2337*, type. Iquitos, *Killip & Smith 27272*, type, *G. loretensis; Klug 252; 680*. Mouth of Santiago, *Mexia 6115* (det. Standl.). "Chope," "mango sacha."

Grias peruviana Miers, Trans. Linn. Soc. 30: 301. 1874; 31.

Tree 7–12 meters high, with linear-lanceolate leaves and inflorescences of 1–4 flowers; leaves sessile or decurrent to a broadly winged petiole to 8 cm. long, the blades often 6 or 7 dm. long or longer and 1.5 dm. broad, abruptly contracted to the acuminate tip, the acute acumen 1.5–2 cm. long; leaf-margin coarsely and remotely undulate-serrate; nerves 1.5 cm. distant; bractlets triangular, 4–6 mm. long; pedicels to 2 cm. long, 2 mm. thick; receptacle glabrous, the calyx limb often 2-lobed, the lobes becoming 9 mm. long; petals 15 mm. long, 10 mm. broad, obtuse; style short.

San Martín: *Spruce 4541*. Río de la Ventana, *Spruce*.

Grias Tessmannii Knuth, Repert. Sp. Nov. 35: 340. 1934; 30.

Tree 10 meters high, the trunk 15 cm. in diameter; leaves narrowly lanceolate, often 5 dm. long and 8–10 cm. broad, narrowed to the acute apex and to the petioles, these 3–9 cm. long, 2.25 mm. across, margin entire, nerves 1.75–2 cm. distant, slender but prominent beneath; flowers usually 3–4 together, the rachis itself 1–2 cm. long; bracts minute, mucronate; pedicels 3.5–4 cm. long, 1.5 mm. thick; receptacle 4 mm. long; calyx limb entire or irregularly 4-lobed; petals ovate, 2 cm. long, deep yellow; processes 10–12 mm. long.

Loreto: Mouth of Santiago, *Tessmann 4187*, type. Río Huallaga, *Williams 4181*. The lower Yurimaguas, *Killip & Smith 27868*. On the Amazon, *Williams 1609*. Ecuador.

3. CARINIANA Casar.

Tall-growing trees with small racemose or paniculate flowers. Calyx limb 6-lobed. Petals 6. Androphorum urceolate-campanu-

late, somewhat oblique but without tongue, the processes all staminiferous. Ovary 3-celled. Fruit woody, the operculum early joined to the placentae, finally opening. Seeds with one long lateral wing.

Cariniana domestica (Mart.) Miers, Trans. Linn. Soc. 30: 286. *pl. 63*. 1874; 36. *Couratari domestica* Mart. Flora 20: Beibl. 2: 127. 1837.

Young branchlets about 2.5 mm. thick, tinged deep purple; leaves oblong-elliptic to about 1 dm. long, half as wide, entire or undulate margined, barely acute at base, shortly and acutely acuminate, the 20 pairs of slender nerves subequally prominent on both sides; flowers in a thyrse to 11 cm. long, nearly as broad; calyx lobes ovate, acute, 2.5 mm. long, the ovate whitish petals twice as long; androphorum 4 mm. broad, reddish-yellow; fruit 6 cm. long, obconic, 3 cm. wide above.—Tree to 60 meters high. Illustrated, Mart. Fl. Bras. 14, pt. 1. *pl. 80*.

Río Acre: Mouth of Río Macauhán, *Krukoff 5597*. Brazil.

Cariniana estrellensis (Raddi) Kuntze, Rev. Gen. 3, pt. 2: 89. 1898; 39. *Couratari estrellensis* Raddi, Mem. Soc. Ital. Modena 18: 403. 1820. *C. excelsa* Casar. Nov. Stirp. Bras. 46. 1842, fide Knuth.

Young branchlets 2.5–3 mm. thick; petioles 7–13 mm. long; leaves to 8 cm. long, 5 cm. broad, more or less acutely or obtusely acuminate, decurrent into the petiole, serrate-crenulate, with about 12 pairs of nerves prominent on both sides; spikes mostly solitary or binate in the leaf-axils, rarely congested into a thyrse; pedicels 3–5 mm. long; calyx lobes scarcely 2 mm. high; petals obovate, 7 mm. long, yellow; androphorum 2 mm. broad; fruit 5 cm. long, 2.5 cm. broad, the operculum 5 mm. high, plane above; seed without wing 10 mm. long, 8 mm. broad, the wing 3.5 cm. long.—A large tree 10–30 meters high. Illustrated, Mart. Fl. Bras. 14, pt. 1. *pl. 79;* Knuth, l.c. 3 (androphorum), 6 (fruit).

Río Acre: Mouth of Río Macauhán, *Krukoff 5568*. Brazil; Bolivia; Paraguay. "Jequitibá branca."

4. COUROUPITA Aubl.

Trees with oblong-cuneate entire or inconspicuously crenate-serrate leaves and racemes of large flowers, generally rather terminal, rarely from the old wood. Bracts deciduous. Calyx limb 6-lobed. Petals 6, somewhat unequal. Androphorum annuliform with a lateral tongue-like appendage that is turned over, the processes of

both the basal and reversed portions antheriferous. Ovary inferior, 6-celled; style obsolete, the stigma 6-radiate. Fruit globose, the operculum not dehiscing. Seeds long-funiculate.—The "Cannon Ball Tree," *C. guianensis* Aubl., to which the Peruvian specimen of *C. amazonica* was at one time referred, may be cultivated; it has leaves 1.5–3 dm. long on glabrous petioles, large showy red flowers in panicles from the older branches, and globose fruits as large as cannon-balls which, when the hard shell is broken, are extremely ill-scented as is the wood; the flowers and fruit are borne more or less continuously.

Petals 2 cm. long or shorter; pedicels short.....*C. amazonica.*

Petals 3–5 cm. long.

Pedicels short, only the lowest rarely 6 mm. long or longer.
C. subsessilis.

Pedicels, at least the lower, 2 cm. long or longer.

Leaves more or less long-cuneate to base, barbate in axils.
C. peruviana.

Leaves rounded to the obliquely obtuse base, obscurely if at all barbellate.....*C. acreensis.*

Couroupita acreensis Knuth, Pflanzenreich IV. 219a: 46. 1939.

Tree about 30 meters high; petioles 10–13 mm. long, ciliate on the margins; leaves obovate-oblong, 9 cm. long, 4–4.5 cm. broad, very obtuse, gradually narrowed, the upper third to the obliquely obtuse base, entire, chartaceo-papyraceous, glabrous; raceme 25 cm. long, divided below, the rachis 6 mm. thick, glabrous; pedicels 2 cm. long, deciduously bracteate at base; calyx lobes suborbicular, purple, glabrous, finely ciliolate, 4 mm. long and broad; petals 4–4.5 cm. long, 3–3.5 cm. broad, annulus of androphorum 17–19 mm. broad, the upper portion 27 mm. broad, the processes 13–14 mm. long.

Río Acre: Basin of Río Purus, *Krukoff 5677*, type.

Couroupita amazonica Knuth, Repert. Sp. Nov. 35: 340. 1934; 45.

Branchlets puberulent (at tip) as also the petioles, at least in the Peruvian plant; petioles 2–2.5 cm. long; leaves elongate-oblanceolate, mostly about 14 cm. long, 4 cm. wide, obtuse or nearly, long-attenuate to the acute base, papyraceous, glabrous or somewhat barbellate in the nerve-axils, these 16 or more on each side of the thick midrib; racemes 10–45 cm. long; pedicels persisting, to 3 mm. long; receptacle rugose; calyx lobes only 2–2.5 mm. long and broad;

petals 13–20 mm. long, 7–9 mm. broad, ovate-oblong; androphorum with tongue 2.5 cm. long; annulus 1 cm. broad.—The Peruvian plant apparently has somewhat narrower petals but probably belongs here. Wide-branching tree 18 meters high; flowers borne on trunks of large branches; fruit resembles cannon-ball (Mexia).

Loreto: Iquitos, *Mexia 6502*. Brazil. "Haya-uma," "castanha de macaco."

Couroupita peruviana Berg, Linnaea 31: 261. 1862; 47.

A tree 30 meters high with rusty red branchlets foliose at their tips; petioles sparsely puberulent, 2–2.5 cm. long; leaves oblong, 10–13.5 cm. long, 4.5–5 cm. broad, obtusely and shortly acuminate, gradually narrowed to the obtuse base from about the middle, obsoletely serrulate, thin-chartaceous; racemes axillary, many-flowered, the rachis 4–6 mm. thick, 20–25 cm. long; pedicels 2–2.5 cm. long, the small basal bracts ciliate, also with 2 apical bractlets; flowers very fragrant, the broadly oblong petals pale flesh-colored without and yellowish-punctulate, red within, 4.5 cm. long, 2.75 cm. broad; calyx lobes suborbicular, puberulent, the thin margins ciliate; androphorum 9 mm. broad, white, the tongue reddish; fruit nearly globose, 18 cm. broad, the upper part and operculum small.—*C. surinamensis* Mart. is similar but the leaves are decurrent into the petioles and sparsely barbate in the axils beneath. Flowers red, white and yellow (Klug).

San Martín: Tarapoto, *Spruce 4495*, type. Juanjuí, *Klug 4357* (det. Standl.).—Loreto: Puerto Melendez, *Tessmann 4777*. Balsapuerto, *Klug 2835*. "Aya Uma" (i.e. "Totenkopf," fide Tessmann).

Couroupita subsessilis Pilger, Verhandl. Bot. Ver. Brandenb. 47: 163. 1905; 45.

A tall, glabrous tree or the leaves sparsely barbate in the axils beneath; branchlets often 1.5 cm. thick, densely marked by the leaf scars, the leaves crowded on them apically and these narrowly obovate-oblong, 2 dm. long, 8.5 cm. broad, obtuse, gradually cuneate from the upper portion into the narrow petiole (2 cm. long, 2 mm. thick), firm papyraceous to chartaceous, the nerves 5–7 mm. distant, stout and prominent on both sides; racemes terminal, to 7 dm. long, the rachis 8 mm. thick; calyx lobes rotund-ovate, 6 mm. long; petals 3–5 cm. long, 2–2.5 cm. broad, whitish; androphorum yellow, the processes roseate-purple; fruit 6 cm. broad.—*C. amazonica* Knuth has membranous leaves and petals 13–20 mm. long; *C. elata* A. C. Smith has calyx lobes 3–4 mm. long but Ducke, fide Knuth, thinks

it is the same as *C. subsessilis*. The Indian name, fide Tessmann, means "Totenkopf," a skull, from the form and stench of the fruit (broken). F.M. Neg. 29157.

Loreto: Mouth of Santiago, *Tessmann 4827*. Brazil. "Aya Uma."

5. LECYTHIS Loefl.

Tall trees with nearly the character of *Eschweilera*, which could be included as a subgenus but the ovary is 4-celled, the style rather elongate, the ovules many in each cell and, especially, the seeds long-funiculate in a very large fruit, the top of which is united firmly to the woody column of the placentae.—The name is doubtfully correct (cf. Knuth) and, as the monographer suggests, should be conserved.

It is possible that one or more species may occur within the boundaries of Peru, especially in the region adjacent to the territory of the Río Acre, but the range of the genus is toward the Atlantic and to Central America. For *Lecythis subbiflora* R. & P. see *Eschweilera*.

Lecythis hians A. C. Smith, Phytol. 1: 123. 1935; 62.

A glabrous tree known to attain 30 meters; branchlets densely lenticellate; petioles 3–7 mm. long, 1.5–1.75 mm. thick; leaves oblong, 7–10 cm. long, 3–4 cm. wide, acutely acuminate, obtuse or rounded at base, serrulate, papyraceous, the nerves 7 mm. distant; racemes mostly corymbose-congested, 5–12 cm. long; rachis rugose, 2 mm. thick; flowers subsessile, the deltoid calyx lobes 4–5 mm. long, 3 mm. broad; petals rounded-oblong, 15–17 mm. long, 12–14 mm. wide; androphorum 15 mm. broad; processes of annulus scarcely 1 mm. long; style fleshy, 1 mm. long; fruit subglobose, 14 cm. long, 16 cm. broad, rugose above calycaric zone, upper zone entire, 11–13 cm. in diameter.

Peru (perhaps). Amazonian Brazil.

6. ESCHWEILERA Mart.

Chytroma Miers, Trans. Linn. Soc. 30: 164, 229. *pl. 34b*. 1874.

Medium to large trees with coriaceous entire to serrate leaves and rather showy flowers in axillary or terminal racemes or panicles. Calyx lobes and petals 6, the latter often somewhat unequal. Androphorum pelviform or annuliform, the processes of the extended tongue-like portion all or most of them not antheriferous; anthers finally opening by a longitudinal chink. Ovary 2–4-celled, the ovules

few, sessile in each cell. Style nearly obsolete to rather short. Fruit coriaceous, the top finally opening, the placentae deciduous. Seeds few, efuniculate or nearly.

Lecythis subbiflora R. & P. Fl. Peruv. 4: *pl. 461.* 1802 (G. Don, Gen. Syst. 2: 873. 1832) known as "Camarón" is the same as (and the earlier name for) *E. integrifolia* (R. & P.) Knuth, 97; Ecuadorian rather than Peruvian, it is omitted here, especially as it suggests Colombian species, for instance, *E. bogotensis* Knuth, 95.

The fruit of most species is unknown. "Matamata" is the native name for the species which furnish hard wood; the inner bark is the source of a good fiber.

Flowers sessile or the pedicels only a few mm. long.

Leaves 4–8.5 cm. wide.

Leaves small, to about 1 dm. long; inflorescence glabrous.

Petioles 5 mm. long; calyx lobes fimbriate.....*E. Klugii.*

Petioles 6–10 mm. long.

Leaves acute.....*E. iquitosensis.*

Leaves rounded at tip.....*E. ucayalensis.*

Leaves medium to large, mostly or all of them longer than 1 dm. or only to 13 cm. in *E. Tessmannii* with tomentulose inflorescence.

Leaves broadly cuneate at base; panicles tomentulose. *E. Tessmannii.*

Leaves rounded at base; inflorescence glabrous.

Leaves caudate with acumen to 1 cm. long...*E. itayensis.*

Leaves merely subcuspidate or acute.

Leaves subcoriaceous; rachis stout.....*E. juruensis.*

Leaves papyraceous; rachis slender.....*E. loretensis.*

Leaves 13–18 cm. wide.

Petals 2 cm. long; racemes 3 dm. long..*E. Mexiana, E. Knuthii.*

Petals to 4.5 cm. long; racemes 1 dm. long.....*E. gigantea.*

Flowers pedicellate, the pedicels about 10 mm. long.

Leaves about 5 cm. wide.

Leaves obovate, rounded at tip.....*E. ucayalensis.*

Leaves oblong, pointed at tip.....*E. timbuchensis.*

Leaves about 10 cm. wide.....*E. fractiflexa.*

Eschweilera fractiflexa Knuth, Pflanzenreich IV. 219a: 110. 1939.

Petioles stout, 1.5 cm. long; leaves oblong, to 23 cm. long, 10 cm. broad, contracted toward the tips, acute, rounded at base, entire, chartaceous-coriaceous or coriaceous, drying brown-olive, glabrous or very finely puberulent below on the thick midnerve; veins barely manifest below; racemes 10–16 cm. long, panicled, about 15-flowered, the somewhat purplish olive rachis 4–5 mm. thick at base, zigzag; pedicels about 12 mm. long, 1.5 mm. thick, the base persisting; receptacles shortly crateriform; lobes broadly ovate, obtuse or nearly rounded, 4–4.5 mm. long; petals to 3 cm. long, 2 cm. broad, yellowish white; androphorum extended, 4 cm. long, annulate portion 1 cm. broad; anthers subrotund, 1 mm. long; processes of the tongue sterile, 6 mm. long; style minute, ovary 2-celled.—Tree 12 meters high.

Loreto: Mishuyacu, *Klug 353*, type.

Eschweilera gigantea (Knuth) Macbr. Candollea 8: 25. 1940. *Lecythis gigantea* Knuth, Repert. Sp. Nov. 38: 113. 1935. *Chytroma gigantea* Knuth, Pflanzenreich IV. 219a: 85. 1939.

Tree to 40 meters high with a trunk diameter of 7 dm.; petioles woody, to 5 mm. thick, purple tinged as the branchlets; leaves oblong, 5 dm. long, 18 cm. broad, rounded but with a slender mucro about 5 mm. long, rounded at base, entire or remotely undulate-dentate, the teeth large, glabrous, the stronger nerves 1.5–2 cm. distant; racemes about 1 dm. long, 14–18-flowered; rachis often 8 mm. thick, strongly angled; bracts minute, broadly triangular; flowers subsessile, the crateriform receptacle 7 mm. long, the lobes 6, rounded-ovate, entire, 14 mm. long, 12 mm. broad; petals various in form and size, sometimes 4.5 cm. long, 3 cm. broad, more or less erose-undulate, pale yellow; extended androphorum 6 cm. long, the processes of the annulae about 5 mm. long, brownish-yellow, those of the tongue deep-yellow and 10 mm. long or longer.

Loreto: Mouth of Santiago, *Tessmann 4064*, type.

Eschweilera iquitosensis Knuth, Pflanzenreich IV. 219a: 111. 1939.

A tree 15–20 meters high with a trunk diameter of 68 cm.; branches squarrose, gray, the younger deep purple; petioles 6–9 mm. long, 2 mm. thick; leaves to 7 (10) cm. long, 4 (5) cm. broad, more or less abruptly contracted to an acute tip, more or less rounded at base, the lightly revolute margin entire, drying chartaceous and olive-brown; nerves and veins slender but conspicuous beneath; inflorescence paniculate, about 7 cm. broad, the numerous flowers

sessile; receptacle 1.5 cm. long; calyx lobes 5 mm. long, ovate, obtusish, glabrous; petals broad, white, 15–20 mm. long; androphorum expanded, 2.5–3 cm. long, the annulus 1 cm. broad, the processes and minute anthers yellow, those of the tongue pale yellow.

Loreto: Iquitos, *Tessmann 3606*, type; *Klug 1180*. Lower Itaya, *Tessmann 5208*. Brazil. "Matamata."

Eschweilera itayensis Knuth, Pflanzenreich IV. 219a: 111. 1939.

A tree, the ultimate branches slender; petioles 1 cm. long, 2 mm. thick, dark purple; leaves oblong-ovate, 16 cm. long, 8.5 cm. broad, rather rounded-acuminate, the acumen itself 1 cm. long, nearly rotund at base, entire, drying papyraceous-chartaceous and olive-green, the moderately stout nerves 1 cm. distant, the veins very conspicuous beneath; panicle about 8 cm. long and broad, the glabrous branchlets deep purple; pedicels persistent, 1 mm. long, finally enlarged; receptacle glabrous, 6 mm. long; calyx lobes broadly ovate, lacerate-fimbriate, glabrous; petals 1.75 cm. long and broad; androphorum extended, 2 cm. long, the sterile galericulate processes 3 mm. long; annulus 10 mm. broad, the processes and anthers minute.

Loreto: Upper Río Itaya, *Williams 3260*, type.

Eschweilera juruensis Knuth, Pflanzenreich IV. 219a: 111. 1939.

Tree known to attain 40 meters, the ultimate branchlets 4–5 mm. thick, brown, glabrous, squarrose; petioles 1.5 cm. long, deep brown, glabrous, somewhat winged, 2–3 mm. broad; leaves oblong, to 22 cm. long, 8.5 cm. broad, often smaller, merely cuspidate at the suddenly contracted apex, rounded at base, entire or inconspicuously undulate, drying chartaceo-coriaceous or chartaceous and brown, the nerves 7–10 mm. distant, pronounced above but scarcely prominent beneath, the intermediary nerves many, also prominent above, the veins beneath slender; racemes axillary, 10–13 cm. long, about 15-flowered, the stout rachis 4–6 mm. thick, lightly zigzag, glabrous, often sparsely branched but the branches very short; flowers subsessile; bracts glabrous, 8 mm. long, ovate; receptacle stout, 7 mm. long, half as broad or larger; sepals semi-ovate, obtuse, glabrous.—Petals and androphorum undeveloped.

Río Acre: Near mouth of Río Macauhán, *Krukoff 5741; 5755*, type. Brazil.

Eschweilera Klugii Knuth, Pflanzenreich IV. 219a: 111. 1939.

An 18 meter tree, the ultimate dark gray branchlets 2–3 mm. thick; petioles 5 mm. long, 1.5 mm. thick, brown; leaves lanceolate-oblong, to 10 cm. long and 4 cm. broad, often narrower, abruptly contracted to an acute tip, basally broadly cuneate, drying chartaceous, green above, brownish-green beneath, entire, the nerves rather irregularly 6–12 mm. distant; racemes 5 cm. long, the many flowers 2–6 mm. distant, panicled; pedicels persisting, finally enlarged, 1 mm. long; calyx lobes broadly ovate, lacerate-fimbriate, glabrous; petals broad, to 15 mm. long, yellow; expanded androphorum 15 mm. long, the sterile processes of the tongue 3 mm. long, the fertile ones of the annulus, this 8 mm. broad, minute, as also the style.

Loreto: Mishuyacu near Iquitos, *Klug 597*, type; *386*.

Eschweilera Knuthii Macbr. Candollea 8: 25. 1940; 90. *Chytroma Tessmannii* Knuth, Repert. Sp. Nov. 38: 113. 1935, not *E. Tessmannii* Knuth, Pflanzenreich IV. 219a: 115. 1939.

A tree known to attain 10 meters, the trunk 9 cm. thick, branching at 6 meters, the bark of the branches gray; petioles 1–2 cm. long, 3–3.5 mm. thick; leaves lanceolate-oblong to 4.5 dm. long and 13 cm. broad, abruptly contracted toward the tip and coarsely mucronate, cuneate or rounded (the larger leaves) at base but not decurrent into the petiole, entire, drying firm papyraceous and deep olivaceous, glabrous, the nerves prominent beneath as the veins; racemes simple, 3 dm. long, about 20-flowered, corymbed, the rachis olive-brown, 3 mm. thick at base, the nodes 3 mm. long; pedicels obsolete; receptacle broadly crateriform, coriaceous; calyx lobes semicircular, very obtuse, 4 mm. long; petals about 2 cm. long, 13 mm. broad, deep carmine; androphorum carmine to flesh color, 3.5–4 cm. long, extended, the processes of the annulus 1–2 mm. long, the anthers minute, those of the tongue sterile, broadly linear, 7 mm. long.—Perhaps the same as *E. Mexiana* but petioles shorter, leaf veins prominent, calyx lobes smaller; **E. andina** (Rusby) Macbr., comb. nov., *Lecythis andina* Rusby, Mem. Torrey Club 6: 37. 1896, is even less clearly distinct.

Loreto: Mouth of Santiago, in flood-free wood, *Tessmann 3935*, type.

Eschweilera loretensis Knuth, Pflanzenreich IV. 219a: 112. 1939.

Tree 10 meters high, the branchlets ashy brown, rather short, 4 mm. thick; petioles 1–1.5 cm. long, 2–2.5 mm. broad, glabrous;

leaves oblong, usually 2 dm. long and 8 cm. wide, obtuse, rounded at base but the petiole more or less winged by the extension of the leaves, entire, papyraceous and green, glabrous, the lateral nerves about 20, with the veins moderately prominent beneath; racemes 1–1.5 dm. long, panicled, few, the rachis 2 mm. thick, glabrous, armed by the rudiments of the pedicels, these about 1 cm. remote, persisting, 2 mm. long, 1.5 mm. thick; pedicels 2 mm. long, subsessile; sepals rotund-cordate, 5 mm. broad, 4 mm. long, glabrous, entire; petals red, rotund-obovate, 2 cm. long, glabrous; androphorum extended, 4.5–5 cm. long, the tongue fleshy, 12–14 mm. broad; galericulum 2 cm. wide; anthers of the annulus ovoid; style conoid, 3 mm. long.

Loreto: Cachipuerto on the Río Cachiyaco between Balsapuerto and Moyobamba, *Klug 3121*, type.

Eschweilera Mexiana (Knuth) Macbr. Candollea 8: 25. 1940. *Chytroma Mexiana* Knuth, Pflanzenreich IV. 219a: 136. 1939.

Said to be a tree attaining 18 meters, the flowers white but only the fruit described, this 5–6 cm. high and broad, the part below the operculum turboid, 3 cm. high, the calyculate zone to within 15 mm. of the operculum, 5 cm. broad, the persisting sepals subligneous, triquetrous, 12 mm. high, 15 mm. broad; interzonal vittae 14 mm. high, concave below, convex above; superior zone 5.5 cm. in diameter, lightly undulate; operculum conoid, more or less cusped apically, 5.5 cm. in diameter, more or less radiate, thick woody as the pyxidium; cells (in the fruit) 4.—In specimen seen the branchlet is 7 mm. thick, the attached petiole 5 mm. thick, 3.5 cm. long, the leaf nearly oblong, 4.5 dm. long, 18 cm. wide, rounded and apiculate at apex, broadly rounded or subtruncate at base, chartaceo-coriaceous, nerves mostly about 1.5 cm. distant, rather prominent beneath, scarcely apparent above, the veins obscure even beneath; flowers detached and broken but seemingly sessile, the petals apparently 3 cm. long, half as wide, the 6 sepals glabrous, suborbicular, 1 cm. long; androphorum 3 cm. long, the annulus about 1.5 cm. broad; style short.—Hardwood used for beams (Mexia).

Loreto: Pongo de Manseriche on the right shore of the Río Santiago, 220 meters, in thick wood, *Mexia 6243*, type. "Hua capú."

Eschweilera Tessmannii Knuth, Pflanzenreich IV. 219a: 115. 1939.

Known to attain 25 meters with a trunk diameter of 7 dm., the ultimate branches densely marked with dark minute lenticels; petioles

1 cm. long, dark purple; leaves often 3–10 cm. distant, oblong, to 13 cm. long, 5.5 cm. broad, abruptly contracted to the acute tip, broadly cuneate at base, drying chartaceous, gray above, pale brown beneath, entire; nerves slender and scarcely obvious above, the netted venation slender beneath; inflorescence paniculate, to 2 dm. long, the branchlets many, brown-tomentulose, abundantly flowered; true pedicels 1–1.5 mm. long, finally persisting and enlarging to 1.5 mm. thick; receptacle minutely tomentose, 7 mm. long; calyx lobes ovate or ovate-oblong, rounded interiorly, minutely tomentose; petals pale rose, whitish at base, broad, 1.5 cm. long; androphorum 2.5 cm. long, the annulus 1 cm. broad, the brownish anthers minute.

Loreto: Mouth of Santiago, *Tessmann 4691*, type. Mishuyacu, *Klug 156; 258*. Upper Río Nanay, *Williams 3180*.

Eschweilera timbuchensis Knuth, Pflanzenreich IV. 219a: 115. 1939.

A tall tree, the ultimate branchlets 2.5–3 mm. thick; petioles stout, 2 mm. thick, to 9 mm. long; leaves oblong, usually 13 cm. long, 5 cm. broad, rather suddenly contracted to an acute tip, nearly rotund at base, entire or lightly undulate-margined, the midnerve prominent, the nerves irregularly so and 7–15 mm. distant, the venation conspicuous; pedicels 1 cm. long; fruit (perhaps not mature) 4.5 cm. in diameter, 5 cm. long, obtuse.—Apparently similar to, if indeed distinct from *E. Krukovii* A. C. Smith, 112, of adjacent Brazil.

Loreto: Timbuchi, on the Upper Río Nanay, *Williams 979*, type.

Eschweilera ucayalensis Knuth, Pflanzenreich IV. 219a: 116. 1939.

Trunk of the type with a diameter of 8 dm.; petioles to 1 cm. long, 2 mm. thick, more or less brown-colored; leaves obovate, to 9.5 cm. long, 5.5 cm. broad, rounded or nearly retuse, broadly cuneate at base, entire or obscurely crenate, drying pale brown and firm papyraceous, glabrous, the nerves slender but prominent, 8 mm. distant; calyx lobes broadly ovate, 4 mm. long; petals pale yellow, very broad, 15–20 mm. long; androphorum about 3 cm. long; galericulum pale, the annulus deep yellow, the latter 1 cm. broad, the processes, anthers and style minute.

Loreto: Yarina-cocha, on the Middle Ucayali, *Tessmann 3218*, type.

7. COURATARI Aublet

Trees in many respects similar to *Eschweilera* but the lateral extension of the androphorum spirally incurved back toward or

over the antheriferous processes. Ovary 3-celled, the ovules many in each cell. Fruit oblong-cylindrical, finally opening. Seeds few, thin, wing-margined.

Couratari macrosperma A. C. Smith, Bull. Torrey Club 60: 383. 1933; 131.

Ultimate branchlets thick; petioles stout, to 1 cm. long; leaves oval-oblong or oblong, to 18 cm. long, 8 cm. broad, obtuse, broadly cuneate at base, lightly undulate-margined, drying olive-green, the lateral nerves about 25; racemes axillary and terminal, 1–2 dm. long, nearly simple; rachis stout, densely brown-stellate pubescent, 15–20-flowered; pedicels thick, densely pubescent, 5–8 mm. long, articulate below the middle and minutely 3-bracteolate; calyx lobes oblong-rotund, obtuse, to 8 mm. long and broad, pubescent without, the margins shortly ciliate; petals white, obovate, puberulent without, about 2 cm. long and broad; androphorum extended, 3 cm. long, the tongue 10 mm. broad; fertile processes 1 mm. long, the oblong anthers as long; receptacle turbinate, pubescent, the style stout; fruit without the operculum 18 cm. long, gradually narrowed to the calycarate base, this portion 16 cm. above the true base, 8.5 cm. across; interzonal vitta erect, 2 cm. high, the upper zone 8 cm. broad. —Ducke, according to Knuth, regards this species as highly variable in character of fruit, and includes 2 other species here. Illustrated (androphorum), Knuth, l.c. 3.

Río Acre: Mouth of Río Macauhán, *Krukoff 5638; 5687.* Brazil.

MELASTOMACEAE

References: Cogniaux, DC. Monogr. Phan. 7: 1891; Gleason, Brittonia 1: 127–184. 1932 and Carnegie Inst. Wash. Publ. 522, No. 20: 323–373. 1940.

The characteristics of this well-known family are given in detail in the classical monograph cited, pages 7–8; there too is a key to the tribes and the genera which it has not seemed necessary to copy here for it would be in any case incomplete. On the other hand, there follows a key which perhaps accounts for the Peruvian species. Attention may be called to the genera *Mouriria* and *Alloneuron*, which depart from the familiar family character of several leaf nerves from the base to apex of the leaves in having pinnately nerved leaves; there are, however, species of *Miconia* (shrubs) as well as an herb with only one conspicuous nerve (midnerve). Unfortunately,

the first division of the key has to rest on the character of the fruit, but often this is evident.

The generic lines are probably drawn in trivial fashion in many cases; in *Leandra* one finds axillary and terminal (becoming lateral) inflorescences and yet elsewhere in the family one must be content to consider the position of the inflorescence as of prime importance, one or two "genera" having nothing more to recommend them. Even the development of the appendages of the anthers has been used in delineating genera in an exaggerated way sometimes, as in the tribe Bertolonieae, while quite as much variation elsewhere has received only sectional (if that) recognition. Apropos are the words of Cogniaux himself, l.c. 4: "The delimitation of genera is arbitrary enough; one could easily distinguish more of them, at the same time one could justify the reunion of many of those which are generally admitted today. I believe as does M. Baillon who conserves only 54, that one admits generally too many; however, *in order not to disturb too much the nomenclature* . . . I have united only those which it appeared to me completely irrational to leave separated." (The italics are mine.)

It is with no little diffidence that I, with my imperfect knowledge of the family, have ventured in two or three instances to unite groups accepted as distinct since the appearance of the Cogniaux monograph, but in these cases I have merely followed Baillon's suggestions; actually, it is my own feeling that, by and large, his proposed classification is sound, serving, that is, the purpose of practical taxonomy—real usefulness—and at the same time presentation of the probable evolution of the groups and their apparent present relationship. However, compare a noteworthy article by Epling, Amer. Nat. 72: 547–561. 1938, as well as the thought-provoking symposium entitled "The Concept of the Genus," Bull. Torrey Club 67: 349–389. 1940.

Finally, there is more than a hint in the remarks of Cogniaux that he viewed Baillon's work with sympathy, but was bound by tradition. Of course between certain groups as those surrounding *Clidemia* there is nothing to be contributed, probably, by changes in status because the lines of demarcation are arbitrary, in order to serve the historical interest as well as for convenience; on the other hand there are a number of smaller groups that merit study with a view to their union for the purpose of contributing to a more practical and uniform or logical classification within the family.

With thanks I acknowledge my indebtedness to the publications of Gleason, notably in the Flora of Surinam, and in his synopsis of the family for British Guiana; besides, I have copied largely from his careful and discriminating work as cited. For convenience the well-known monograph of Cogniaux has been cited as "Cogn. Melast."

The following key is sometimes only suggestive and sometimes applies only to the Peruvian species.

Fruit a pod (possibly baccate in one herbaceous genus); ovary usually free from the calyx.

Woody plants, usually shrubs, trees, or vines.

Pubescence on stems or branches, usually also in the inflorescence, glandular.

Calyx teeth one-half the length of the tube or longer; capsules short.

Flowers 5-merous; seeds oblong-ovoid . . . 2. *Rhynchanthera.*

Flowers 4-merous.

Leaves about 2 cm. long; seeds pyramidate. 3. *Centradeniastrum.*

Leaves 3 cm. long or longer; seeds cochleate. 4. *Ernestia.*

Calyx teeth much shorter than the tube; capsules 1–2 cm. long . . . . . 5. *Arthrostemma.*

Pubescence not glandular or scarcely so, rarely the calyx; plants sometimes glutinous-punctate or resinous.

Connective of at least some of the anthers obviously produced below the cells.

Leaves small, about 1 cm. long or shorter; seeds oblong-ovoid . . . . . 1. *Microlicia.*

Leaves usually much larger; seeds cochleate or angled (unknown in *Sandemania*).

Calyx lobes prominent (sometimes caducous); seeds cochleate.

Flowers tubular-campanulate, the petals strongly incurved . . . . . 8. *Brachyotum.*

Flowers open, the petals spreading.

Calyx setose, with branched or stellate trichomes between the lobes . . . . . 12. *Pterolepis.*

Calyx not stellate setulose.

Petals obtuse or retuse; ovary usually setose at tip; flowers usually in terminal panicles.

Anther connective appendaged anteriorly.

Stamens subequal; stems not inordinately spreading-villous.....13. *Tibouchina.*

Stamens very unequal; stems inordinately villous.....7. *Desmoscelis.*

Anther connective bilobed or gibbous posteriorly only.....9. *Macairea.*

Petals acute; ovary glabrous; flowers paniculate. 10. *Sandemania.*

Calyx lobes minute or less than one-half as long as the tube; seeds angled except in *Aciotis*, cochleate.

Calyx limb not a circumscissile cone.

Calyx tube globose or ovoid.....15. *Aciotis.*

Calyx tube oblong-campanulate...21. *Graffenrieda.*

Calyx limb a closed cone, circumscissile at anthesis. 22. *Calyptrella.*

Anther connective not obviously produced.

Leaves with 3–9 longitudinal nerves.

Calyx limb not a circumscissile cone.

Plants more or less pubescent with long hairs.

Flowers tubular-campanulate, the petals strongly incurved; seeds cochleate.....8. *Brachyotum.*

Flowers open, the petals spreading.

Flowers 4-merous; seeds cochleate.

Calyx oblong-campanulate...16. *Monochaetum.*

Calyx globose or ovoid.....15. *Aciotis.*

Flowers 5-merous; seeds linear or angled or spindle-shaped.

Scandent or sarmentose plants; connective with a bidentate erect appendage. 18. *Adelobotrys.*

Erect shrubs or trees.

Petals 1 cm. long or longer.

Appendages not inflated or tumid. 19. *Meriania.*

Appendages much inflated or tumid.
20. *Axinaea.*

Petals shorter than 1 cm....21. *Graffenrieda.*

Plants glabrous or the pubescence short (puberulent or furfuraceous), never scandent (cf. the scandent *Adelobotrys*); seeds cuneate-angled or spindle-shaped.

Petals less than 1 cm. long.

Calyx truncate, very minutely toothed.
24. *Tessmannianthus.*

Calyx lobed or irregularly ruptured.

Seeds winged; appendage filiform..17. *Huberia.*

Seeds not winged; appendage short.
21. *Graffenrieda.*

Petals 1 cm. long or longer.

Appendages not inflated or tumid...19. *Meriania.*

Appendages much inflated or tumid.20. *Axinaea.*

Calyx limb a closed cone circumscissile at anthesis.

Flowers small, to 6 mm. long.....22. *Calyptrella.*

Flowers large, 1 cm. long or longer.....23. *Centronia.*

Leaves pinnately nerved.....25. *Alloneuron.*

Herbs, or half-shrubs, woody only toward base, erect or sprawling (*Salpinga* rarely suffrutescent).

Calyx and capsule terete, not strongly ribbed-angled or winged; seeds cochleate or reniform (in *Catocoryne* unknown).

Calyx lobes prominent at least about one-third the length of the tube.

Plants silky villous, stout; calyx hairs simple.
7. *Desmoscelis.*

Plants slender, not villous.

Plants more or less pubescent.

Calyx hairs in part branched or stellate.
12. *Pterolepis.*

Calyx hairs if present, simple.

Filiform plant.....35. *Catocoryne.*

Slender but robust plants.

Half-shrub; hairs on leaves above partly adnate to leaf-surface.....13. *Tibouchina.*

Annual herb; hairs if present, not adnate.
14. *Acisanthera.*

Plants glabrous.....6. *Nepsera.*

Calyx lobes minute or at least much shorter than the tube.

Calyx tube oblong-campanulate, 1–2 cm. long.
5. *Arthrostemma.*

Calyx tube ovoid or globose, small.....15. *Aciotis.*

Calyx or capsule strongly ribbed-angled or winged; seeds ovoid-angled, except in *Pterogastra* cochleate.

Leaves 1–7-nerved; stamen-connective not spurred, sometimes tubercled.

Leaves 1–5-nerved; connective smooth or tubercled.

Calyx tube winged, ciliate-echinate.....11. *Pterogastra.*

Calyx tube 8–10-costate, smooth.....26. *Macrocentrum.*

Leaves 7-nerved; stamen-connective not spurred.
27. *Salpinga.*

Leaves 3–7-plinerved; stamen-connective 1–3-spurred.

Leaves 3–5-plinerved; plants stemless; connective 1-spurred.
28. *Monolena.*

Leaves 5–7-plinerved; plants caulescent.

Stamen-connective 3-spurred.....29. *Triolena.*

Stamen-connective 2-spurred.....30. *Diolena.*

Fruit baccate, berry-like or hard; ovary usually adherent; shrubs or trees; seeds ovoid-angled or subrotund.

Leaves usually with 3–9 longitudinal nerves (exceptions are in *Miconia*); seeds not subrotund, many.

Leaves not striolate between the primary nerves (unless rarely in *Miconia*).

Inflorescence characteristically terminal.

Petals acute or acuminate, narrow or if broad very acuminate; anther-connective not or little prolonged, often raised.....31. *Leandra.*

Petals obtuse or rarely acute in *Miconia* but then the anther-connective spurred or appendaged.

Leaves not vesicular; anther-connective not elevated.

Calyx limb a closed cone circumscissile at anthesis.
32. *Conostegia.*

Calyx limb not calyptriform or at least not circumscissile (closed in some species of *Miconia*).

Stamens minutely if at all appendaged; filaments often narrow.

Calyx lobes unappendaged or minutely. 33. *Miconia.*

Calyx lobes with conspicuous outer teeth. 36. *Heterotrichum.*

Stamens conspicuously appendaged; filaments broad. 34. *Icaria.*

Leaves often vesicular at base; anther-connective raised. 37. *Tococa.*

Inflorescence lateral or axillary.

Petals obtuse.

Leaves vesicular at base.

Anther cells convoluting.....38. *Maieta.*

Anther cells not convoluting.

Anthers straight or nearly.....39. *Clidemia.*

Anthers, at least somewhat, curving apically toward flower-center.....37. *Tococa.*

Leaves not vesicular.

Anthers narrow or long rostrate, 1-pored; flowers small.

Flowers borne with the leaves (or rarely below them, *C. septuplinervia*).....39. *Clidemia.*

Flowers in small clusters, usually borne below the existing leaves.....41. *Henriettea.*

Anthers oblong, usually short and thick, 1–2 pored; flowers usually large.....40. *Bellucia.*

Petals acute or acuminate.

Flowers borne below the current leaves, clustered or solitary.....41. *Henriettea.*

Flowers axillary (at least some inflorescences subtended by leaves) solitary or densely glomerate, cymose or paniculate (*Leandra* rarely might be sought here).

Calyx limb regularly toothed or truncate..42. *Ossaea.*

Calyx limb irregularly lobed, closed or dehiscing above at anthesis.....43. *Myriospora.*

Leaves finely striolate between the primary nerves (cf. one or two Miconias); flowers bracted.....44. *Blakea.*

Leaves pinnately nerved but the lateral nerves often scarcely if at all obvious; seeds subrotund, few.....45. *Mouriria.*

1. MICROLICIA D. Don

Small often slenderly branched shrubs, usually somewhat ericaceous in general appearance. Leaves frequently shorter than 10 mm. and wanting toward the base of the branches or stems, sometimes more or less imbricated. Flowers small, 4–5-merous. Stamens unequal; anthers all perfect, rostrate and with connective long-produced below. Ovary 3-celled; the capsule apically dehiscent.—Sometimes, as in some other genera, the connective of larger anthers may be extended upward as an appendage.

Besides the following, *M. peruviana* Cogn. in Mart. Fl. Bras. 14, pt. 3: 83. 1883; 52, might be sought here because of its name although it is known only from Cochabamba, Bolivia, and more likely ranges into Brazil than into Peru; it has glabrate branches, entire setulose-margined leaves 3–4 mm. wide, persisting below. Similarly the broom-like *M. arenariaefolia* [Mart. & Schr.] DC., 44, with awl-shaped leaves, reported by Cogniaux from "Cochabamba, Peru," is known only from Bolivia and Brazil.

Leaves (some of them) setose-denticulate; flowers 5-merous. *M. Weddellii.*

Leaves all entire, the revolute margins eciliate; flowers 4-merous. *M. sphagnicola.*

Microlicia sphagnicola Gleason, Bull. Torrey Club 58: 215. 1931.

Shrubby, about 1 meter high, freely branched, the younger branches densely glandular with short stout trichomes and setose at the nodes; leaves narrowly elliptic, 2 mm. wide, punctate both sides; calyx tube obconic, glandular, with 4 setae; sepals ovate-lanceolate, 2 mm. long, ending in an awn 0.7 mm. long; petals 6–7 mm. long; glandular-margined connective of outer larger anthers long-produced, truncate, those of the smaller shortly produced, obtuse.—Characteristic plant of type-locality (collectors).

Junín: Eneñas, Pichis Trail, in open sphagnum bog or swamp, 1,700 meters, *Killip & Smith 25680*, type.

Microlicia Weddellii Naud. Ann. Sci. Nat. sér. 3. 12: 251. 1849; 40.

Low shrub with somewhat flexuose gray-barked stems (the younger setose at nodes) that are leafless below; leaves oblong-elliptic,

5–7 mm. long, 2–2.5 mm. wide, glabrous but some sparsely long setulose-denticulate; calyx tube glandular-punctate, 4 mm. long, the shorter subulate lobes long-setose apically; petals roseate, 4–7 mm. long; anthers ovoid, very shortly beaked.—*M. paraensis* Ducke, Archiv. Jard. Bot. Rio Jan. 3: 225. 1922, is marked by the long pilose nodes, somewhat larger leaves and flowers, the anthers subulate, beaked. F.M. Neg. 36105.

Puno: Prov. of Carabaya, now Sandía, *Weddell*, type. Mountains of Yuncacoya, (Weberbauer, 241).

2. RHYNCHANTHERA DC.

Shrubby or sometimes herbaceous, usually glandular-pubescent plants with 5–9-nerved ovate leaves, paniculate, rather showy, 5-merous purple flowers and glandular calyces with narrowly subulate lobes that are nearly as long or longer than the tube. Stamens very unequal, 5 sterile, the anthers filiform, the 5 larger fertile ones with rostrate anthers, their slender-produced connective usually tuberculate or bidenticulate at its insertion on the filament.

Calyx teeth filiform, longer than the tube, glandular-setose. *R. Haenkeana.*

Calyx teeth shorter than the tube, somewhat hirsute or villous-glandular..... *R. Hookeri.*

Rhynchanthera Haenkeana DC. Prodr. 3: 107. 1828; 104. *R. Matthaei* Naud. Ann. Sci. Nat. sér. 3. 12: 209. 1849.

Calyx teeth glandular-setulose, linear-filiform, 5–7 mm. long, longer than the tube; petals to 15 mm. long; branchlets hispidulous with gland-tipped hairs of unequal length; petioles mostly 5 mm. long; leaves glandular-ciliolate, scattered-hispidulous both sides, 5 (–7) -nerved, oblong-ovate, acuminate, rather rounded or acute at base; style about 15 mm. long; capsule globose, 4 mm. in diameter. One of the fertile stamens is larger.—The filiform calyx teeth are the conspicuous feature of this species, as they are for *R. grandiflora* (Aubl.) DC., 101, distinguished by cordate leaves, long petioles. F.M. Neg. 36114.

Amazonas(?): *Mathews 1316* (also *1273; 1274; 1275*). Without locality (*Haenke*, type).

Rhynchanthera Hookeri Naud. Ann. Sci. Nat. sér. 3. 12: 212. 1849; 109. *R. Williamsii* Gleason, Bull. Torrey Club 58: 216. 1931(?).

Calyx teeth slightly glandular-pubescent, subulate, 2–4 mm. long, shorter than the more densely glandular villous tube; petals 7–10 mm.

long, rounded and apiculate at tip; fertile stamens about equal; connective 2-toothed at base; stems hispid; leaves cordate-ovate, 7-nerved, acuminate, ciliate-margined, glabrate, about 5 cm. long, 3 cm. wide, reduced in the open inflorescence; ovary ovoid, the style 6.5–15 mm. long; capsule globose to 6 mm. thick, slightly puberulent-glandular at tip.—The author of *R. Williamsii* wrote: "*R. Hookeri* has a hispid stem, shorter and spreading sepals, longer and narrower petals attenuate at base, shorter anther beak, a slender and more elongate connective 2-toothed at base, ovoid ovary and much longer style." But in the type (as seen by me) the stems are not more hispid or the sepals more spreading, and in both types the petals are somewhat attenuate; the other "differences" are clearly relative, the connective being 2-toothed in both types; probably the material seen by Gleason was less mature, or actually mixed. F.M. Neg. 26098.

San Martín: San Roque, *Williams 7283* (det. Gl.); *Williams 7284* (type, *R. Williamsii*). Near Moyobamba, *Mathews 1276; Klug 3431*. Colombia. "Chichirilli-sacha," "chicitilla sacha."

3. CENTRADENIASTRUM Cogn.

Small shrubs or sometimes herbs with petioled leaves and rather small 4 (5)-merous cymose flowers. Calyx teeth shorter than the tube. Stamens unequal, the connective of the larger erostrate anthers strongly produced and more or less extended above the insertion of the filament. Ovary glabrous, (3) 4-celled.—Cogniaux separated this genus from *Centradenia* G. Don because the connective of the smaller anthers is not produced, unappendaged; also, the leaves in *Centradenia* are disparous. In view of the presence of similar variations elsewhere in the family it does not seem to me that it is useful or necessary to regard the Peruvian plant as generically distinct but of course it is quite possible to do so; the other (known) species are Mexican or Central American, with one from Colombia, and the recognition of *Centradeniastrum* as more than a section destroys the interesting conception of a range for a group of plants obviously closely allied. This is yet one more instance where one interested in phytogeography finds his materials obscured by a too fine drawing of generic lines. The species, if it is transferred to *Centradenia*, could well be named for Cogniaux, there being a *C. rosea*.

Centradeniastrum roseum Cogn. Bot. Jahrb. 42: 131. 1908.

Branches erect, glandular-puberulent, 4–5 dm. high; petioles filiform, 5–15 mm. long; leaves bright green and glabrous above,

pale beneath, ovate, about 2 cm. long or shorter, 8–18 mm. wide; cymes 3–6 cm. long; pedicels 3–8 mm. long; calyx tube about 3 mm. long, the triangular subulate teeth half as long; petals 8 mm. long; longer anthers 3 mm. long, the produced part as long, but only shortly and obtusely extended above the filament-insertion.—F.M. Neg. 16684.

Cajamarca: Chugur near Hualgayoc, in wet shrubby wood, 2,800 meters, *Weberbauer 4086*, type.

4. ERNESTIA DC.

Shrubby or subherbaceous glandular pubescent plants with rather thin 3–7-nerved serrulate leaves and open terminal panicles of rather small flowers. Calyx glandular the subulate-triangular lobes about equaling the 8-ribbed tube, this membranous in fruit. Stamens unequal but nearly alike, the filiform connective appendages longer than the connective. Capsule 3- or 4-celled, apically glabrous or setose.—The species could readily be included in *Arthrostemma*.

Calyx lobes longer than the tube; stamens alike.....*E. tenella.*

Calyx lobes and tube subequal; stamens dissimilar....*E. quadriseta.*

Ernestia quadriseta Berg ex Triana, Trans. Linn. Soc. 28: 35. 1871. *E. quadrisetosa* Berg, fide Cogn. Melast. 144. 1891.

Stems, leaves both sides and panicle branches densely short-hispidulous with divaricate trichomes, only those on the leaves not gland-tipped, those on the leaves beneath rather finer; petioles to 1.5 cm. long; leaves 5–7-nerved, 3–5 cm. long, 2–3 cm. wide; inflorescence rather close, leafy; calyx tube about 3 mm. long, the purplish petals 8–9 mm. long, the calyx lobes narrowly triangular.—Illustrated, Triana, l.c. *pl. 2.* F.M. Negs. 21166; 36124.

San Martín: Tarapoto, *Spruce 4584* (*4884*, fide Triana), type; *Williams 5989* (det. Gl.).—Loreto: Balsapuerto, *Killip & Smith 28600* (det. Gl.); *Klug 3021; 2868.*

Ernestia tenella (Bonpl.) DC. Prodr. 3: 121. 1828; 144. *Rhexia tenella* Bonpl. Rhex. 79. *pl. 30.* 1823. *E. tenella* var. *Sprucei* Cogn. in Mart. Fl. Bras. 14, pt. 3: 227. 1885. *E. Sprucei* (Cogn.) Macbr. Field Mus. Bot. 4: 172. 1929.

Similar to *E. quadriseta* but the inflorescence very open and the pubescence longer and looser; calyx lobes subulate, 4–5 mm. long; petals white; ovary scarcely puberulent apically.—The var. *Sprucei* is a form with purple flowers and ovary setulose, and is the Peruvian

plant, but the difference is hardly constant or noteworthy. F.M. Negs. 36125; 21167 (var.).

Amazonas: Moyobamba, *Mathews 1277.* Brazil.

5. ARTHROSTEMMA R. & P.

Weak-stemmed or semi-scandent sparsely glandular-setose herbs with long internodes, sometimes somewhat woody toward the base. Leaves petioled, broad, ciliately serrulate. Flowers rather large, borne apically, cymose or scorpoid, 4-merous. Calyx tube oblong or narrowly campanulate, the much shorter calyx lobes persisting on the often conspicuous and lustrous fruit. Stamens dissimilar, the connective of the larger with filiform erect appendage that is clavate and tridenticulate, that of the smaller biaristate. Capsules elongate, the seeds cochleate.

Arthrostemma ciliatum R. & P. Fl. Peruv. 4. *pl. 326.* 1802; Pav. ex D. Don, Mem. Wern. Soc. 4, pt. 2: 299. 1823; 140. *Rhexia diversifolia* Bonpl. Rhex. 119. *pl. 45.* 1823.

Herb trailing over bushes or sprawling on wet banks, smooth or nearly, even the younger branches little glandular; petioles 1–2 cm. long; leaves ovate, lightly cordate, acuminate, 5-nerved, 4–6 cm. long, about half as wide; flowers loosely borne, to 1.5 cm. long; capsules (as to type) 15 mm. long, 6–7 mm. thick, the brown seeds beautifully rugose-tuberculate.—The type is in fruit but it is doubtful if there is more than one species characterized by nearly equal stamens. *A. macrodesmum* Gleason (*A. campanulare* (Naud.) Tr. not DC.) found as near as Ecuador has shortly pediceled flowers and stamens very unequal, the connective of the episepalous stamens as long or longer than the thecae; the connective of the widely distributed and otherwise similar *A. fragile* Lindl. is much shorter than the thecae (Gleason).

San Martín: Tocache, *Poeppig 1690.* Near Tarapoto, *Williams 6772; 7143.*—Huánuco: Chinchao and Cuchero, *Ruiz & Pavón.* Pozuzo, *4681.* Without locality, *Dombey.*—Junín: La Merced, *5411.* Ecuador.

Arthrostemma grandiflorum Markgr. Notizbl. Bot. Gart. Berlin 9: 1139. 1927.

Suffrutescent, the scandent stems more or less glandular-setose; leaves 5–7-nerved; petals 2.5 cm. long; stamens unequal; ovary apically glandular-setose. Probably a large-flowered race of the preceding but allied by the author to *A. latifolium* D. Don because

of the pubescent ovary; the allied genus *Ernestia* has in *E. tenella* a species in which the pubescence of the ovary varies. As Gleason, who has referred here the K. & S. collections, has suggested, the genus needs monographic study.—The following material, except as to type with larger flowers (!), I should refer to the R. & P. species, variable in capsule size and pubescence. F.M. Neg. 16688.

Junín: Puerto Bermúdez, *Killip & Smith 26618.*—Huánuco: Region Churubamba, *Mexia 8156.*—Loreto: Pongo de Manseriche, *Tessmann 3904,* type. Mouth of Santiago, *Tessmann 4153.* Balsapuerto, *Klug 2892.* Florida, *Klug 2319.*—Ayacucho: *Killip & Smith 23082; 23114.*

6. NEPSERA Naud.

Herb or woody below with petioled, cordate-ovate, serrulate, 5–7-nerved leaves and extremely lax, trichotomously branched panicles of small white 4-merous flowers, these with oblong-lanceolate acute petals. Calyx lobes as long as the tube, persistent. Stamens unequal, the subulate anthers dissimilar; connective arcuately produced and anteriorly with 2 recurved-ascending appendages. Ovary globose, glabrous, free, 3-celled. Seeds short, cochleate, coarsely foveolate.

Nepsera aquatica (Aublet) Naud. Ann. Sci. Nat. sér. 3. 12: *pl. 14;* sér. 3. 13: 28. 1849; 146. *Melastoma aquatica* Aublet, Pl. Guian. 1: 430. 1775.

Stems to one meter long or longer, the thin leaves 4–6 cm. long, 1.5–2.5 cm. wide, the pyramidal panicle 1–3 dm. long, its branches exceptionally slender; calyx tube 2–3 mm. long; petals 5–6 mm. long; capsule 2 mm. thick.—Widely distributed and found near Peru, it is to be expected in the Amazonian region. Illustrated, Mart. Fl. Bras. 14, pt. 3: *pl. 53.*

Peru (probably). Brazil to Ecuador and the Antilles.

7. DESMOSCELIS Naud.

Erect, stout or subligneous virgate-stemmed, silky-villous herb with medium-sized 5-merous flowers more or less crowded on short axillary branchlets. Calyx lobes persistent, about as long as the campanulate tube. Stamens very unequal, the oblong-subulate anthers dissimilar, the connective of the larger long-produced and provided with two anterior filiform appendages, that of the smaller arcuate and merely biauriculate anteriorly. Ovary more or less adherent, pubescent apically, 5-celled. Seeds cochleate, granulate. —The habit and long-villous pubescence which extends even to the

calyx identify the plant vegetatively; technically it is perhaps, in view of variation in the family, arbitrarily separated from *Acisanthera* P. Br. with free and glabrous 2–4-celled ovary; the latter, in *A. quadrata* Juss., 130, was accredited to the Peruvian flora by Cogniaux on the basis of a Pavón (so labeled) specimen, doubtless of Antillean or Central American origin.

Desmoscelis villosa (Aublet) Naud. Ann. Sci. Nat. sér. 3. 12: *pl. 14;* sér. 3. 13: 30. 1849; 147. *Melastoma villosa* Aublet, Pl. Guian. 1: 428. 1775.

Simple or somewhat branched, the flowers commonly crowded at the tips of short axillary branchlets or sometimes thyrsoid or paniculate; trichomes on the stems 3–4 mm. long or even longer; calyx tube and ovate-subulate lobes 5–6 mm. long; petals 1 cm. long; capsule 4–6 mm. long.—Leaves usually ovate-lanceolate, 3–5 cm. long, about 2 cm. wide or narrower; variable particularly in form of inflorescence.—Illustrated, Bonpl. Rhex. *pls. 31* and *43*.

San Martín: San Roque, *Williams 7118; 7410* (det. Gl.). Bolivia to Guiana and Colombia.

8. BRACHYOTUM (DC.) Triana

Shrubs, often compactly branched, with numerous rather small or small usually harshly setose leaves and more or less nodding tubular-campanulate 4–5-merous flowers commonly borne in three's at the ends of branchlets, sometimes solitary or cymose. Calyx lobes persistent. Stamens equal, the anthers similar, narrow, the connective not elongated, simple or anteriorly bitubercled or bicalloused. Ovary free, apically setose. Seeds cochleate.—Approaches *Tibouchina* through some species, but characterized by the shape of the flowers. In the following key the character "flowers 4- or 5-merous" has been avoided because some species are already known to vary in this respect; similarly questionable as fundamental is the group-division of the species based on anther character; the anthers may be bicalloused at base (this sometimes very obscure) or smooth in species otherwise much alike.

Flowers ebracteate, the bracts early caducous.

Pubescence, at least that of the branchlets, closely appressed-strigose; anthers minutely calloused at base except *B. nutans, B. alpinum, B. asperum, B. ledifolium.*

Leaves narrow or small, usually revolute, all or most of them 1–4(5) mm. wide, 3–15 mm. long, oblong-linear or, if ovate, inordinately calloused.

Leaves ovate, the surface completely covered with tubercles.

Leaves to about 5 mm. long, 2.5 mm. broad ..... *B. lycopodioides.*

Leaves about 3 mm. long, 2 mm. wide ..... *B. minimum.*

Leaves narrowly oblong-lanceolate, more or less calloused-setose above.

Leaves sparsely setose beneath ..... *B. Grisebachii.*

Leaves densely setulose beneath ..... *B. rosmarinifolium.*

Leaves larger, usually broader, or if only 4–6 mm. wide, not at all conspicuously calloused.

Leaves glabrous or only very sparsely setulose above.

Calyx lobes narrow, soon longer than the tube; anthers bicalcarate ..... *B. cernuum.*

Calyx lobes ovate, shorter than or as long as the tube; anthers smooth.

Petals about 2 cm. long ..... *B. nutans.*

Petals about 1 cm. long ..... *B. alpinum.*

Leaves obviously, often densely setulose above.

Calyx lobes subulate-linear, as long or longer than the tube; leaves 5-nerved.

Leaves setulose ..... *B. quinquenerve.*

Leaves silky-villous ..... *B. campanulare.*

Calyx lobes ovate to narrowly ovate-lanceolate, sometimes as long as the tube; leaves 3-nerved.

Leaves sparsely setulose on nerves beneath, sometimes on veins, not at all granulose.

Calyx lobes remote at base, much shorter than tube.

Flowers mostly or all ternate ..... *B. Pentlandii.*

Flowers corymbose-paniculate ..... *B. floribundum.*

Calyx lobes usually contiguous, often about equaling the tube.

Leaves ovate-elliptic, obtuse, about 1 cm. long, 5–8 mm. wide ..... *B. Naudinii.*

Leaves ovate-oblong, subacute, often longer. *B. strigosum.*

Leaves tomentose beneath or at least granulose on the veins, often also more or less setulose.

Calyx sericeo-strigose.

Anthers bituberculate at base.....*B. Radula.*

Anthers etuberculate at base.....*B. asperum.*

Calyx very shortly- and appressed-setulose.

B. ledifolium.

Pubescence, at least that of the branchlets, spreading or ascending, in any case never appressed strigose-setulose, sometimes villous, sometimes setulose; anthers smooth except *B. Barbeyanam, B. Figueroae, B. parvifolium.*

Leaves oblong- or lanceolate-ovate, 2–3 times longer than broad, acute or subacute, usually revolute.

Leaves small, to about 15 mm. long.

Calyx lobes oblong-linear; leaves rarely 10 mm. long.

B. microphyllum.

Calyx lobes ovate-oblong; leaves mostly 10–12 mm. long.

B. Trianaei.

Leaves mostly longer than 2 cm.

Pubescence spreading; petioles 5–10 mm. long.

B. Weberbaueri.

Pubescence subappressed; petioles 2–4 mm. long.

B. ledifolium.

Leaves broadly ovate-elliptic, rarely twice longer than broad, often obtuse, often plane.

Branchlets setulose, the trichomes firm.

Pubescence on leaves beneath merely setulose.

Pubescence sparse, confined to veins; shrub lax.

B. lutescens.

Pubescence dense; shrub compact, strict...*B. Figueroae.*

Pubescence on leaves beneath consisting of two sorts of trichomes.....*B. canescens.*

Branchlets villous or villous-hirsute.

Calyx sparsely setulose; anthers smooth.....*B. rostratum.*

Calyx densely sericeous; anthers minutely bicalcarate.

Leaves 1.5–3.5 cm. long.....*B. Barbeyanum.*

Leaves 8–15 mm. long.....*B. parvifolium.*

Flowers bracteate.

Bracts suborbicular; anther connective not calloused.

Leaves small; flowers solitary.....*B. confertum.*

Leaves ample; flowers racemose.....*B. racemosum.*

Bracts narrowly ovate or lanceolate; anther connective obscurely bicalloused.

Bracts narrowly ovate; leaves about 1 cm. wide.
B. Benthamianum.

Bracts narrowly lanceolate; leaves wider.....*B. quinquenerve.*

Brachyotum alpinum Cogn. Melast. 167. 1891.

Apparently like *B. nutans* but the calyx lobes narrowly ovate-lanceolate, 4 mm. long, the tube 6 mm. long and the petals only 11–12 mm. long.—Of the same alliance but the much larger leaves slightly setulose above, the flowering peduncle filiform, is *B. gracilescens* Triana, 167, of Ecuador, to be expected. *B. alpinum* also being Ecuadorian I suspect that at least the Cuzco collection cited here belongs to *B. nutans*. F.M. Neg. 25862.

Ayacucho: Quinua, 3,300 meters, *Weberbauer 5540* (det. Cogn.). Totorabamba, 3,600 meters, *Weberbauer 5484* (det. Cogn.).—Cuzco: Valle del Apurímac, *Herrera 757* (det. Markgr.). Ecuador. "Carhuinchu."

Brachyotum asperum Cogn. Bot. Jahrb. 42: 132. 1908.

Young branchlets shortly appressed-setulose; petioles 2–5 mm. long; leaves rigid, nearly plane, narrowly ovate-oblong, entire, 3–5-nerved, rather densely callous-asperous above but green, the setae very short, densely and shortly ashy-setulose beneath, 3–4.5 cm. long, 20–27 mm. wide; flowers 5-merous, solitary, ternate, nodding; calyx ashy appressed-setulose, the tube 8–9 mm. long, the oblong, apiculate, rigid lobes 4–5 mm. long; petals narrowly obovate, setulose dorsally toward the acute tip, 17–18 mm. long; anthers 5 mm. long.—Allied by the author to *B. rostratum*. Corolla dark gentian blue, calyx light rust-color (S. & H.). Shrub 1 meter high. *B. gracilescens* Triana, 167, Ecuadorian, has thin, less pubescent leaves, petioles to 10 mm. long. F.M. Neg. 16707.

Cajamarca: Near Hualgayoc, 3,400 meters, *Weberbauer 4013*, type. In clay-gravel, 3,000 meters, La Tajona, *Stork & Horton 10023*.

Brachyotum Barbeyanum Cogn. Melast. 158. 1891.

Branchlets appressed-villous-hirsute, the hairs reddish; petioles to 6 mm. long; leaves narrowly ovate, densely appressed-setose above the surface, soft to the touch but the trichomes minutely bulbous-based, the 3 nerves densely red-villous beneath, 1.5–3.5 cm. long; calyx lobes ovate-lanceolate, about equaling the softly long-

villous tube, this 8 mm. long; flowers 5-merous, the subtruncate petals scarcely ciliate, 2 cm. long; anthers 5 mm. long; ovary shortly setose; style 2.5 cm. long.—In age leaves are probably larger, pubescence harsher above; the type is only a flowering branchlet. F.M. Neg. 36853.

Amazonas: Chachapoyas, *Mathews*, type.

Brachyotum Benthamianum Triana, Trans. Linn. Soc. 28: 49. 1871; 162.

Younger branchlets shortly appressed-strigose; leaves densely and finely appressed bullate-setulose, the 3 nerves prominent above, finely appressed-setulose beneath, many only 2 cm. long, 1 cm. wide or smaller; bracts 1–1.5 cm. long, glabrous within; flowers 4- or 5-merous, subsessile, solitary or ternate; calyx densely sericeous, the membranous lobes slightly longer than the tube, this 6 mm. long; petals narrowly obovate, subrotund at tip, 1.5 cm. long.—Similar Ecuadorian species also to be expected are *B. Jamesonii* Triana, 161, and *B. campylanthum* Triana, 163, the former with smaller, less pubescent leaves, the latter with flowers solitary at tips of lateral branchlets, the bracts obovate.—F.M. Neg. 16708. Illustrated, Baill. Hist. Pl. 7: 8. *fig. 11.*

Peru (?): (*Seemann 773 bis*, fide Cogn.). Ecuador.

Brachyotum campanulare (Bonpl.) Triana, Trans. Linn. Soc. 28: 48. 1871; 153. *Rhexia campanularis* Bonpl. Rhex. 35. *pl. 14.* 1823.

Leaves densely sericeous-villous above and below, the trichomes above, at least typically, densely appressed but not at all callous-based, 2–3 cm. long, 12–17 mm. wide, the upper smaller; flowers usually solitary; calyx tube 4–5 mm. long, the lobes 7–9 mm. long, lanceolate-linear, acuminate; petals 12–14 mm. long, obovate-oblong, the acute tip terminating in a bristle.—A Pavón specimen without locality, referred here by Cogniaux, is appressed-setulose above, appressed-sericeous beneath, the calyx lobes only about equaling the tube; there is no proof that it is Peruvian and it seems to me that it does not belong here. The type actually came from Loja. *B. rotundifolium* Cogn., 152, Ecuador, has 7-nerved leaves to 2 cm. long and nearly as wide. F.M. Neg. 36135.

Huánuco: Chinchao (*MacLean*, fide Cogn.). Ecuador.

Brachyotum canescens (Bonpl.) Triana, Trans. Linn. Soc. 28: 48. 1871; 165. *Rhexia canescens* Bonpl. Rhex. 14. *pl. 6.* 1823.

Petioles 2–3 mm. long; leaves finely appressed-setulose above, the trichomes only minutely calloused or scarcely, the midnerve

and nerves beneath setulose hispid, a few minute setae mixed with the intervening tomentum, 3-nerved, ovate, 1–2 (3) cm. long, 5–10 mm. wide; calyx lobes firm, shorter than or nearly equaling the tube, this 6 mm. long; flowers 5-merous the scarcely ciliate petals purple or yellowish.—F.M. Neg. 36136.

Ancash: Between Huaraz and Yungay, *Weberbauer 2928;* 179. Colombia. "Sarzilejo."

Brachyotum cernuum (Bonpl.) Triana, Trans. Linn. Soc. 28: 48. *pl. 3.* 1871; 157. *Rhexia cernua* Bonpl. Rhex. 32. *pl. 13.* 1823.

Branches 4-angled, the younger sparsely appressed-setulose, especially at the nodes; petioles 2–5 mm. long; leaves oblong-ovate, 1.5–3 cm. long, 6–15 mm. wide, acute, glabrous except the 3 nerves lightly setulose beneath; flowers usually 3–5, nodding on pedicels to 1 cm. long; calyx sparsely and minutely setose, the tube 5–7 mm. long, the erect narrow membranous lobes twice to thrice as long; petals obovate, subacute, shortly ciliolate, 2–2.5 cm. long, the style as long; anthers 5 mm. long.—Description by Cogniaux. *B. trichocalyx* Triana, 158, with small, glabrous leaves but long-setose calyx may be expected from Ecuador. F.M. Neg. 36137.

Peru (perhaps). Ecuador. Colombia.

Brachyotum confertum (Bonpl.) Triana, Trans. Linn. Soc. 28: 49. *pl. 3.* 1871; 163. *Rhexia conferta* Bonpl. Rhex. 53. *pl. 20.* 1823.

Abundantly and slenderly branched shrub to about 1 meter high, with numerous almost tiny leaves; branchlets minutely but densely strigose; petioles to 2 mm. long; leaves narrowly ovate, 3-nerved, rigid, revolute, glabrate beneath except for setulose midnerve and margin, finely appressed-setulose above, 3–7 mm. long, 2–3 mm. wide; flowers 5-merous subtended by 6 suborbicular rather membranous appressed-sericeous bracts 8–12 mm. long; calyx sericeous, the tube 6 mm. long, the ovate lobes slightly shorter; petals suborbicular, 10–12 mm. long; anthers 3 mm. long.—Illustrated, Bot. Mag. *pl. 6018. B. Andreanum* Cogn., 164, Ecuadorian, has larger leaves and flowers.

Amazonas: Chachapoyas, *Mathews; Fielding 1225.* Above Balsas, 3,400–4,000 meters, *Weberbauer 4291;* 268. Ecuador.

Brachyotum Figueroae Macbr. Field Mus. Bot. 4: 173. 1929.

Branchlets crowded, densely subappressed-setulose, tardily glabrate; petioles and leaves beneath densely hirsute, the leaves broadly

ovate, about 9 mm. long, 5–6 mm. wide, conical-tubercled above, the tubercle setiferous; flowers solitary or 3–4, 4–5-merous, whitish, the rounded obovate shortly ciliolate petals about 12 mm. long; calyx lobes ovate, about 4 mm. long, scarcely half as long as the sparsely setulose tube; anther minutely bituberculate.—Simulates *B. lutescens* with smooth anther, and is doubtfully distinct. About 1 meter high.

Ancash: Catuc, 7 km. east of Huaraz, *2504*. "Cotchkis blanco."

Brachyotum floribundum [Griseb.] Triana ex Cogn. Melast. 155. 1891.

Shrub with relatively long and slender appressed-setulose branchlets distinctive by its cymose inflorescence; petioles 2–4 mm. long; leaves mostly 3–4 cm. long, 1.5 cm. wide, acutish both ends, appressed-setulose above, the setae with very slender callus at base, beneath rather sparsely setose-hispid on the veins and 3–5 nerves, otherwise glabrous; flowers 4-merous; petals 12–14 mm. long; pedicels slender, setulose, articulate at middle, 5–15 mm. long; calyx attenuate at base, 5 mm. long, slightly setose, the broad lobes scarcely 1 mm. long.—Grisebach assigned the name under *Chaetogastra* in herbaria. *B. sanguinolentum* Triana, 154, to be expected in southern Peru from Bolivia, is glabrate, the flowers twice as large. F.M. Neg. 16709.

Puno: Tabina, *Lechler 1857*, type. Sandía Valley, 2,300 meters, *Weberbauer 626;* 237.—Cuzco: Near Huallahualla, Marcapata, 3,300 meters, *Vargas 9708*. "Tili tili."

Brachyotum Grisebachii Cogn. Melast. 153. 1891.

Similar to *R. rosmarinifolium;* typically leaves 1–1.5 (2) cm. long, 4–7 mm. wide, sparsely setulose above, not bullate, glabrous beneath except the sparsely setulose nerves; flowers 4-merous; calyx sparsely appressed-setose, the lobes about as long as the tube, this 4–5 (6) mm. long; petals about 2 cm. long, subacute.—According to Cogniaux the calyx tube is 7–8 mm. long, the lobes 8–10 mm. long. F.M. Neg. 16711.

Puno: Near Agapata, *Lechler 1856*, type.—Cuzco: Prov. of Cuzco, *Gay; Weddell; Herrera*. Ecuador?

Brachyotum ledifolium (Desr.) Triana, Trans. Linn. Soc. 28: 48. 1871; 165. *Melastoma ledifolia* Desr. in Lam. Encycl. 4: 48. 1797. *Chaetogastra sulphurea* Naud. Ann. Sci. Nat. sér. 3. 14: 135. 1850. *C. Bonplandiana* Naud. l.c. 137. *pl. 4*(?).

Branches glabrate, exfoliating; branchlets appressed-setose, the setae rigid; petioles 2–4 mm. long; leaves oblongish, 1.5–2.5 (3) cm. long, 5–7 (10) mm. wide, bullate (not calloused) above and shortly but sparsely setulose, beneath granulose-setulose, usually revolute at margin; flowers yellowish, often ternate, 5-merous, subsessile, nodding; calyx lobes oblong-elliptic, 3–4 mm. long, much shorter than the campanulate, appressed-setulose tube; petals obovate-suborbicular, 1.5 cm. long; style 2 cm. long; anthers 5 mm. long.—*C. Bonplandianum* Naud. of Ecuador is similar but is probably distinct as the branchlets are singularly ashy scurfy-pubescent. F.M. Neg. 36131.

Peru (?): *J. Jussieu*, type. Without locality, *Ruiz & Pavón* (det. Markgr.). Ecuador.

Brachyotum lutescens (R. & P.) Triana, Trans. Linn. Soc. 28: 48. 1871; 166. *Rhexia lutescens* R. & P. Fl. Peruv. 3: 84. *pl. 319*. 1802.

Densely branched shrub, the branches and branchlets spreading rusty-setulose; petioles 2–3 mm. long; leaves ovate, blunt, plane, 1–1.5 cm. long, 7–9 mm. wide, bullate-calloused setulose above, sparsely setulose beneath; flowers yellowish or whitish and sometimes red-edged, often ternate, often nodding, 4- or 5-merous; calyx at first somewhat glandular hirsute, the glands evanescent, the oblongish lobes about half as long as the tube, this about 8 mm. long; petals obovate, somewhat rounded at tip, 15 mm. long; anthers 7–8 mm. long.—Also at Muña and Chaglla (Ruiz & Pavón). Probably with more material will be found to include *B. Trianae* and *B. Figueroae*. F.M. Neg. 16713.

Huánuco: Pillao, *Ruiz & Pavón*, type. Mito, *1872*.

Brachyotum lycopodioides Triana, Trans. Linn. Soc. 28: 49. 1871; 161.

Closely allied to *B. rosmarinifolium* but the leaves lineate, tubercled above, the lustrous tubercles usually in 4 rows and leaving no free leaf-surface; leaves mostly only 3–4 (6) mm. long, strigose-hirsute beneath, rigid, revolute-margined; flowers nodding, 5-merous; oblongish calyx teeth and tube subequal, 3–4 mm. long; petals broadly ovate, retuse, 9 mm. long.—Illustrated, Weberbauer, page 234.

Amazonas: Bajasan (*Mathews 1254*, type). Chachapoyas, 2,400 meters, *Weberbauer 4399;* 264 (det. Cogn.); *Williams 7587* (det. Gl.). —Huánuco: Mountains of Pozuzo (*Pearce*).—Junín: West of Huacapistana, *Weberbauer 2072;* 251, 234.

Brachyotum Maximowiczii Cogn. Melast. 154. 1891.

Younger branches densely appressed-setose; petioles 2–3 mm. long; leaves ovate, minutely crenulate, blunt, densely calloused above with conical tubercles, thickly pilose beneath, 8–12 mm. long, 5–7 mm. wide; pedicels very short but bibracteolate, the bractlets ovate-oblong, 5–7 mm. long; calyx tube 6 mm. long, the narrowly ovate lobes somewhat rounded at apex; petals narrowly obovate, subrounded at tip, 13 mm. long; anthers 2.5–3 mm. long.—The flowers were described as 4-merous.

Amazonas: Bejasan, prov. Chachapoyas (*Fielding 1265*).

Brachyotum microphyllum (Naud.) Triana, Trans. Linn. Soc. 28: 49. 1871; 164. *Chaetogastra microphylla* Naud. Ann. Sci. Nat. sér. 3. 12: 136. 1849.

Branchlets and leaves beneath densely hispidulous with short, spreading trichomes; leaves rather sparsely strigose above, setulose beneath, 6–9 mm. long, 3–5 mm. wide, obsoletely 3-nerved; flowers 5-merous, nodding; calyx sparsely setulose, the membranous subulate-linear lobes subequaling the tube, this 5 mm. long; petals broadly obovate.—Perhaps a variety of *B. rosmarinifolium* (Triana). In the type the leaves are finely densely callous-setulose above, densely setulose beneath. F.M. Neg. 36133.

Peru (?): Without locality, *Bonpland*.

Brachyotum minimum Markgr. Notizbl. Bot. Gart. Berlin 13: 459. 1937.

Nearly *B. lycopodioides;* leaves ovate, 3 mm. long, 2 mm. broad; calyx tube 8 mm. long, densely sericeous-setose, the lanceolate teeth half as long, 1 mm. broad; petals orbicular, shortly acuminate and glandular-apiculate in bud, only 2 mm. long and broad; fruit campanulate, 6 mm. broad.

Cajamarca: With old fruits and young flowers, May, 1879 (*Raimondi*, three sheets, type).

Brachyotum Naudini Triana, Trans. Linn. Soc. 28: 48. 1871; 159.

Much branched; petioles 3–4 mm. long; leaves ovate-elliptic, about 1 cm. long, 5–8 mm. wide, appressed-setulose above and all over beneath, the trichomes on the upper surface with slender calloused base; flowers nodding, sometimes 5-, sometimes 4-merous; calyx lobes broadly triangular, acute, equaling the tube, this about 5 mm. long; petals ovate, acutish, ciliate, 1.5 cm. long.—The leaves

are plane, scarcely bullate. The Williams collection has narrower, longer calyx lobes than type, slightly larger leaves. F.M. Neg. 36134.

Huánuco: Palca, *Dombey.*—Amazonas: Chachapoyas, *Williams 7572.*

Brachyotum nutans Gleason, Bull. Torrey Club 54: 25. 1927.

Branchlets sparsely appressed-setose with a ring of setae at the nodes; petioles 2–3 mm. long; leaves 3-nerved, glabrous above, sparsely appressed-setose beneath, ovate-oblong, 8–12 mm. long, 4–6 mm. wide; flowers 4-merous; peduncle nodding, 5 mm. long; calyx glabrous or nearly so, the broadly triangular sepals a little shorter than the tube, this 4.5 mm. long; petals 19 mm. long; connective with minute dorsal protuberance at base and 2 anterior callosities. —Contrasted with *B. alpinum* with shorter petals.

Cuzco: Paso de Tres Cruces, Cerro de Cusilluyoc, *Pennell 13847,* type. Paucartambo, 3,700 meters, *Vargas 320; Soukup 379.* Yucay, *Soukup 736.* Ecuador.

Brachyotum parvifolium Cogn. Bot. Jahrb. 42: 132. 1908.

Younger numerous and irregular branchlets with the petioles, pedicels and leaves beneath densely villous, with rather short, erect-spreading, reddish trichomes; petioles 1–3 mm. long; leaves elliptic-ovate, 8–15 mm. long, 6–11 mm. wide, obscurely 3-nerved, pilose above; flowers solitary, 5-merous, the petals glabrous or ciliolate, truncate or retuse, about 14 mm. long; calyx densely long-appressed-villous, the rigid, triangular-linear lobes 6–7 mm. long equaling the tube; anthers 6 mm. long, minutely bicalcarate anteriorly; style 16 mm. long; ovary densely setose above.—Near *B. Barbeyanum.* F.M. Neg. 16715.

Amazonas: Tambo Ventillas, Chachapoyas, *Weberbauer 4406,* type.

Brachyotum Pentlandii (Naud.) Triana, Trans. Linn. Soc. 28: 49. 1871; 156. *Chaetogastra Pentlandii* Naud. Ann. Sci. Nat. sér. 3. 14: 133. 1850.

Younger branchlets minutely appressed-strigose; petioles 2–4 mm. long; leaves nearly plane, narrowly ovate, entire, 3-nerved, obtuse, above shortly and finely calloused-setulose, beneath minutely and sparsely setulose on the nerves, 1.5–2.5 cm. long, 8–15 mm. wide; flowers often ternate; pedicels 3–5 mm. long, sometimes bracteate at base; calyx tube shortly dense-setulose, campanulate-hemispheric, 8–9 mm. long, the teeth only 2 mm. long, subulate; petals

obcordate, scarcely ciliolate, 18 mm. long; style 2–2.5 cm. long.—One of three similar Bolivian species to be expected in adjacent Peru; *B. microdon* (Naud.) Triana, 155, has petioles 5–10 mm. long, oblong-lanceolate acute leaves 4–8 cm. long, the pedicels 5–10 mm. long, the calyx pulverulent-setulose; *B. hermannioides* (Naud.) Triana, 156, is scarcely different (from *B. microdon*), the leaves ovate, the calyx teeth erect, linear lanceolate. F.M. Neg. 36138.

Peru (probably). Bolivia.

Brachyotum quinquenerve (R. & P.) Triana, Trans. Linn. Soc. 28: 48. *pl. 3*. 1871; 153. *Rhexia quinquenervis* R. & P. Fl. Peruv. 3: 83. *pl. 321*. 1802.

Branchlets slender, shortly appressed-setulose above; petioles 5–10 mm. long; leaves ovate-oblong, 4–7 cm. long, 1.5–2.5 cm. wide, appressed-setulose above, densely so beneath, there the hairs appressed on the nerves, subspreading and finer between them; flowers nodding, 4-merous, ebracteate but the bracts on the pedicels not promptly caducous; calyx lobes narrowly linear, soon 10 mm. long, or finally even to half again as long as the tube; flowers several in a nodding panicle or 3–5 on short branchlets; pedicels 3–6 mm. long, equaled by the narrow bracts; petals obovate, acute, 1.5 cm. long; style 2 cm. long.—A slender open shrub about 1 meter high, well marked by the combination of elongate calyx lobes and large leaves. The Pavón specimen mentioned under *B. campanulare* seems to belong here. The Cuzco plant is scarcely typical, the flowers more crowded, the bracts larger, more prominent, less promptly caducous. F.M. Neg. 16716.

Huánuco: Without locality, *Sawada P89* (det. Gl., *B. microphyllum* but connective calloused). Panao, Chaglla and Muña, *Ruiz & Pavón*. Chinchao and Pillao, *Ruiz & Pavón*. Tambillo southwest of Panao, *3572*. Playapampa, *4858*. Yanano, *4940*.—Junín: *Killip & Smith 24131; 24448* (det. Gl.). Chanchamayo, *Isern 2099*. Huacapistana, *Weberbauer*.—Ayacucho: *Killip & Smith 22272; 22333* (det. Gl.).—Amazonas: Chachapoyas, *Weberbauer 4426*.—Cuzco: Basin of the Urubamba (*Herrera 1964*); *3224; 1559; 3208*. Convención, 2,400 meters, *Vargas 801*.—Department unknown: Andimarca (*Mathews 1170*).—Without locality, *Bonpland; Rivero*. "Cachiquis."

Brachyotum racemosum Cogn. Bot. Jahrb. 42: 132: 1908.

Branchlets shortly and densely sericeous; petioles 6–13 mm. long; leaves plane, oblong, 4–7 cm. long, 14–27 mm. wide, 5-nerved, densely

sericeous-villous both sides; racemes 3–5 cm. long; flowers greenish white, the shortly ciliate roundish petals 16–18 mm. long; bracts 4-seriate, suborbicular; calyx lobes triangular, acuminate, much shorter than the appressed sericeous tube, this 8–9 mm. long; anthers 5–6 mm. long; style 2.5 cm. long.—Allied to *B. confertum.* F.M. Neg. 16714.

Cajamarca: Prov. of Chota, 3,100 meters, west of Huambos, *Weberbauer 4170,* type.

Brachyotum Radula Triana, Trans. Linn. Soc. 28: 48. *pl. 3.* 1871; 160.

Branchlets closely appressed-setulose; petioles 5 mm. long, sometimes much longer; leaves ovate-elliptic or oblong, 2.5 cm. long, 12 mm. wide or much smaller, often obviously and closely denticulate, rather sparsely and minutely callous-tuberculate with short setae above, shortly tomentose beneath; flowers pendent, few, 5-merous, calyx lobes membranous, rounded at tip, slightly shorter than the appressed-setulose tube, this 6–7 mm. long; petals broadly oblong, obtuse, more or less hirsutulous or glabrous, ciliolate, 15–18 mm. long; anthers 5 mm. long.—F.M. Neg. 16717.

Amazonas: Chachapoyas, *Mathews 3210,* type; *Fielding 1260.*—Cajamarca: Near Hualgayoc, 3,100 meters, *Weberbauer 4130* (det. Cogn.); 261.

Brachyotum rosmarinifolium (R. & P.) Triana, Trans. Linn. Soc. 28: 49. 1871; 161. *Rhexia rosmarinifolia* R. & P. Fl. Peruv. 3: 84. *pl. 318.* 1802.

Densely branched shrub the younger branchlets appressed-strigose; petioles 1–2 mm. long; leaves narrowly oblong, revolute, 2–4 mm. wide, 8–12 mm. long, callous-setulose above, appressed hirsute-setulose beneath; flowers 5-merous, nodding; calyx lobes ovate quite as long (type) or a little shorter than the moderately callous-setose tube, this 5 mm. long; petals obovate, scarcely ciliolate; anthers 3 mm. long.—The *Weberbauer 3378* and *2218* were referred by Cogniaux to *B. Maximowiczii* but they have the 5-merous flowers and foliage of this species. The flowers are sometimes several. F.M. Neg. 16907.

Amazonas: In the mountains above Chachapoyas (*Mathews 1253; MacLean;* Weberbauer, 264).—Ayacucho: Huanto (*Pearce*).—Huánuco: (*Ruiz & Pavón*). Mito, *1870.* Monzón, 3,300 meters, *Weberbauer 3378;* 253.—Junín: Tarma, *Ruiz & Pavón.* Huacapistana,

3,300 meters, *Weberbauer 2218;* 251. Altos de Palca, *Isern 583.* "Cachiquis."

Brachyotum rostratum (Naud.) Triana, Trans. Linn. Soc. 28: 48. 1871; 165. *Chaetogastra rostrata* Naud. Ann. Sci. Nat. sér. 3. 14: 135. 1850.

Branchlets deciduously but at first densely long-hirsute; petioles 2–4 mm. long; leaves 10–22 mm. long, 6–14 mm. wide, ovate, densely callous setulose in zones above, hispid on the nerves and hirtellous beneath; flowers 5-merous; calyx tube sparsely setose, 8 mm. long, the membranous oblongish lobes scarcely or nearly half as long; petals glabrous, somewhat truncate, 12 mm. long; anthers 7 mm. long, beaked.—F.M. Negs. 16718; 38256.

Peru: Without locality, *Dombey,* type.

Brachyotum strigosum (L. f.) Triana, Trans. Linn. Soc. 28: 49. 1871; 159. *Melastoma strigosa* L. f. Suppl. 236. 1781. *Rhexia stricta* Bonpl. Rhex. 19. *pl. 8.* 1823.

Branchlets slender, the younger densely strigose; petioles 1–3 mm. long; leaves ovate-oblong, revolute, rigid, sparsely and minutely hirtellous especially on the nerves beneath, finely setulose above, 1–2 cm. long, 4–8 mm. wide; flowers nodding, 5- or sometimes 4-merous, solitary or ternate; pedicel bracts 1–1.5 cm. long; calyx tube broadly campanulate, 5 mm. long, densely long-setose, the membranous, narrowly oblong, acute lobes 6–8 mm. long; petals rounded at apex, ciliolate, 1–1.5 cm. long; style 1.5–2 cm. long, anthers rather long-bicalcarate.—Very similar if not the same is *B. Lindenii* Cogn., 159, Colombian, the calyx shortly strigose, the anthers shortly bicalcarate; to it Cogniaux referred *Weberbauer 2930.*

Ancash: Pichin, 3,600 meters, *Weberbauer 2930.*—Cuzco: Paucartambo, 3,550 meters, *Vargas 319* (distr. as *B. quinquenerve*). Ecuador; Colombia.

Brachyotum Trianaei Cogn. Melast. 167. 1891. *B. callosum* Macbr. Field Mus. Bot. 4: 172. 1929?

Branchlets densely hispidulous; petioles 2–3 mm. long; leaves ovate-oblong, 8–13 mm. long, 4–6 mm. wide, densely tuberculate-setose above, hirtellous-setulose beneath; flowers lutescent, ebracteate, 4- or 5-merous; calyx tube sparsely strigose, eglandular, the membranous acute lobes 4–5 mm. long, shorter than the tube; petals obovate, about 12 mm. long in the type of *B. callosum.*—Anthers, as here interpreted, sometimes obscurely calloused. So far as one can

tell from description there seems to be only one species concerned. Shrub, 0.5–1.5 meters high. My *1871*, in part, has small leaves suggestive of *B. microphylla* but calyx of this species. Perhaps not distinct from *B. lutescens*. F.M. Neg. 16719.

Huánuco: In scattering hillside thickets northeast of Huánuco, *2181*, type, *B. callosum*. Mito, *1871* (petals greenish white, red-edged). Yanano, *4927* (flowers white).—Huancavelica: Puno formation near Salcabamba, 3,871 meters, *Stork & Horton 10429*.—Cuzco: Paucartambo, *Soukup 387*.—Puno: Tabina, *Lechler 2061*, type, *B. Trianaei*.

Brachyotum tyrianthinum Macbr. Field Mus. Bot. 4: 174. 1929.

Moderately branched shrub 1–2 meters high, the slender, glabrous branches little or not at all exfoliating; branchlets, petioles and leaves above more or less densely appressed-setulose; petioles about 3 mm. long; leaves ovate, mostly 3 cm. long, 1 cm. wide, sparsely hirtellous beneath; flowers solitary, nodding, 4-merous (as to type); calyx tube appressed-setulose, 7 mm. long, the longer lanceolate lobes sparsely setulose; petals subrotund, about 15 mm. long; connective obscurely tuberculate.—The leaf setae above are finely calloused at base. Near *B. Naudinii* and *B. Grisebachii*.

Huánuco: Mito, slender rather open shrub, *1438*, type. Southeast of Huánuco, *2092*(?). "Cachis."

Brachyotum Weberbaueri Cogn. Bot. Jahrb. 42: 133. 1908.

Branchlets densely pubescent with short spreading trichomes; petioles densely hirsutulous, 5–10 mm. long; leaves plane, 2–4.5 cm. long, 7–14 mm. wide, above green but tuberculate, the setae short, beneath densely ashy-sericeous; flowers often ternate, 4-merous, subsessile, nodding, the retuse, glabrous but ciliolate petals green with violet edges, 13 mm. long; calyx tube 5 mm. long, spreading-setulose, the lance-linear acute lobes shorter; anthers 3 mm. long; style 2 cm. long.—Fide the author, allied to *B. Trianaei*. To 1 meter high. F.M. Neg. 16720.

Amazonas: Tambo Ventillas, 2,400 meters, near Chachapoyas, *Weberbauer 4405*.

9. MACAIREA DC.

Similar to *Tibouchina* but the flowers usually in ample, densely flowered pyramidal panicles and the base of the anther-connective bilobed or gibbous posteriorly but unappendaged anteriorly. Flowers

4-merous, in the Peruvian species not longer than 1 cm.—In a few species the flowers are in axillary cymes; actually a component of *Tibouchina*, the group is nevertheless a convenient segregate.

Calyces eglandular, the lobes about as long as the tube...*M. scabra.*
Calyces glandular, the lobes longer than the tube.....*M. sulcata.*

Macairea scabra Cogn. Bot. Jahrb. 42: 133. 1908.

Branches slender; petioles 5–8 mm. long, with the peduncles and calyces shortly setulose, eglandular; leaves ovate-elliptic, entire, little narrowed at base, 3-nerved, 4–6 cm. long, 2–2.5 cm. wide, minutely tuberculate-setulose above, shortly and densely setulose beneath; panicle 10–17 cm. long, narrowly pyramidal; calyx lobes linear-triangular, shorter than or about equaling the tube, this 3–4 mm. long; petals glabrous, 8–9 mm. long, the style about as long.—A shrub related to *M. albiflora* Cogn., 177, about 1 meter high. F.M. Neg. 16704.

San Martín: Rioja west of Moyobamba, 800 meters, *Weberbauer 4708*, type; 290.

Macairea sulcata Triana, Trans. Linn. Soc. 28: 38. 1871; 180.

Branches angled, sulcate, setose, especially at the nodes; leaves elliptic-lanceolate, narrowed at base, resinous-punctate beneath and on the nerves, setose, smooth above, 5–8 cm. long, 1.5–2.5 cm. wide; inflorescence ample, many-flowered; calyx lobes much longer than the tube, this to 3 mm. long; petals 8–10 mm. long.—Bark of branches exfoliates; the inflorescence branches are brown-hirsute. F.M. Neg. 32324.

San Martín: Tarapoto, *Spruce 4004*, type.

10. SANDEMANIA Gleason

Shrub with many paniculate 4-merous flowers. Hypanthium herbaceous, lightly 8-costate, the calyx tube not produced, its linear lobes short and with no outer teeth. Petals acute. Stamens little dimorphic, the slender subulate anthers somewhat beaked and dehiscent terminally by a pore; connective more or less produced, the outer series provided anteriorly with a U-form appendage or shortly bilobed (inner series). Ovary free, 2-celled, glabrous. Style slender, narrowed to the punctiform stigma.

Sandemania lilacina Gleason, Kew Bull. 480. 1939.

A 2-meter shrub, the upper subterete branches and terminal panicles densely strigose and furfuraceous; petioles 4–5 cm. long;

leaves narrowly oblong, entire, obtuse or subacute, obtuse at base, to 5 cm. long, 12 mm. broad, coriaceous, 5-nerved, glabrous above, beneath on veins pubescent like the stems, the surface shortly hirsutulous and minutely tomentulose; panicles 1 dm. long; bracts broadly ovate, 3 mm. long, the narrower bractlets 1–2 mm. long, ciliate; pedicels 1 mm. long, villous; hypanthium shortly cylindrical, 2.2 mm. long, sparsely hirtellous at base and with some setae between the sepals, these 0.7 mm. long; petals ovate, 3.5 mm. long; filaments 5.2 or 4.1 mm. long, the connective to 1.3 mm. long; style nearly 4 mm. long.—Said to resemble most closely *Macairea* in general aspect but with different connective, glabrous ovary and filaments, acute petals. From *Tibouchina* and *Pterolepis* it differs in its glabrous ovary. But all these characters exist in degree in some genera in the same group.

San Martín: Rioja, 900 meters (*Sandeman 170*, type). Jesus del Monte, near Moyobamba, 900 meters (*Sandeman*).

11. PTEROGASTRA Naud.

A group of weak-stemmed thin-leaved annuals readily recognizable by the winged calyx and capsule. Flowers rather large, solitary or cymose with unequal but similar stamens, the larger with connective usually long-produced and bituberculate at the insertion of the filament. Ovary 4–5-celled, apically setose. Calyx enlarged in fruit and prominently 4–5-winged, the wings ciliate-echinate.

Pterogastra divaricata (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 13: 33. 1849; 181. *Rhexia divaricata* Bonpl. Rhex. 59. *pl. 22.* 1823.

Similar to *P. major;* leaves sparsely puberulent-pilose or setose, 8–16 mm. wide; calyx lobes nearly as long as the tube, this 7–8 mm. long; connective of larger stamens shortly produced; petals to 12 mm. long, rounded at apex; ovary eglandular.

San Martín: San Roque, *Williams 7116; 7643* (both det. Gl.). Near Moyobamba, *Klug 3314.*—Loreto: Balsapuerto, *Klug 3049.* British Guiana; Orinoco.

Pterogastra major Triana, Trans. Linn. Soc. 28: 40. *pl. 2.* 1871; 182.

Stems to several dm. long; leaves somewhat long-pilose both sides (or setose), oblong-lanceolate, 4–8 cm. long, typically 2–3.5 cm. wide; calyx tube 7–8 mm. long, the lobes about half as long; petals 9–11 mm. long, obtuse; connective of larger anthers long-produced; ovary glandular-setulose; capsule about 10 mm. long.—

P. minor Naud., 181, probably to be expected, has much smaller puberulent leaves. Illustrated, Mart. Fl. Bras. 14, pt. 3: *pl. 60.*

Peru: (*Mathews 1278*). Colombia.

12. PTEROLEPIS (DC.) Miq.

Usually herbaceous plants with essentially the character of *Tibouchina*, but the Peruvian species marked by the presence of stellate or penicillate hairs between (alternating with) the prominent calyx lobes. Stamens equal or unequal. Anthers subulate, the connective short or prolonged at base with 2 anterior rounded tubercles.—The group probably really belongs in *Tibouchina*, following Baillon, but it is a convenient segregate from that more typically shrubby and showy-flowered genus.

Calyx lobes longer than the tube; larger stamens with dilated connective ..... *P. glomerata.*

Calyx lobes shorter than the tube; larger stamens with filiform connective ..... *P. pumila.*

Pterolepis glomerata (Rottb.) Miq. Comm. Phyt. 78. 1840; 190. *Rhexia glomerata* Rottb. Descr. Pl. Surin. 8. *pl. 4.* 1798.

Stems erect, branched above, several-10 dm. tall, 4-angled and more or less densely strigose, with geniculate rigid hairs; leaves sessile or nearly, oblong-lanceolate, usually 2–4 cm. long, 6–15 mm. wide, acute, 3-nerved, somewhat strigose on both sides; flowers usually in dense, terminal clusters; calyx pubescent with long branched hairs, tube 4–5 mm. long, the lobes often a little longer, eglandular; stamens equal; connective short, thick. Variable (probably).—The Peruvian form would be var. *peruviana* Cogn. (the type from Chiquitos, Bolivia) with pubescent calyx and leaves to 8 mm. wide. F.M. Neg. 26146. Illustrated, Bot. Mag. *pl. 2838* (as *Osbeckia glomerata*).

Peru (probably). Warm South America and the West Indies.

Pterolepis pumila (Bonpl.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 263. 1885; 185. *Rhexia pumila* Bonpl. Rhex. *pl. 35.* 1823.

Similar to *P. glomerata* but often simple-stemmed or little branched, the leaves shortly petioled and 1–4 cm. long, 4–10 mm. wide, the flowers axillary or terminal, single or few; calyx tube about 2.5 mm. long, hirsute-glandular, the lobes 2 mm. long with a long bristle at tip; larger anthers to 2 mm. long, the connective scarcely half as long.—Resembles most *P. trichotoma* (Rottb.) Cogn., to be

expected, but that has anthers 3–5 mm. long, the slender round connective 2–3 mm. long. For that species, fide Cogniaux, Creuger employed the name *P. pumila* DC.; Linnaea 20: 102. 1847.

Amazonas: Chachapoyas (*Mathews 3220*). Brazil to Central America.

13. TIBOUCHINA Aubl.

Shrubs, trees, or less frequently herbs, often with rather large leaves and showy or small 4–8-merous flowers, rarely solitary but usually borne in terminal panicles. Stamens subequal or often alternately unequal, the connective short- or long-produced and variously short-tuberculate or spurred anteriorly or unappendaged. Ovary free, setose at tip, usually 4–5-celled, the style usually filiform, the stigma punctiform.

All of the Peruvian species except two have subulate pointed anthers. These two belong to the section *Purpurella*, the anther dehiscent by a large pore; Gleason has suggested that the section may claim generic rank which would be in logical accord with some other genera, so called. The majority of the species listed here, however, pertain to the section *Diotanthera* with 5-merous flowers, ebracteate but the pedicels often bracteolate; similar are two species with 8-merous flowers. A number of species have bracted flowers, a few with calyx lobes soon falling, others with calyx lobes persisting. One species, *T. gracilis*, of this alliance is herbaceous, as one other but that has truncate anthers.—*T. ciliaris* (Vent.) Cogn. has been accredited to Peru, collected by *Dombey;* actually the specimen in Herb. Jussieu is labeled as from Herb. Dombey, which is another matter; however, the species, Colombian, if found, may be known from *T. stenophylla* by the spreading glandular-villous pubescence and larger leaves.

Anthers truncate; herbs or half-shrubs, spreading-hirsute below, or if shrubs, petals villous without.

Shrub; petals villous without ..... *T. grossa.*

Herbaceous above; petals glabrous ..... *T. clinopodifolia.*

Anthers attenuate; petals glabrous; shrubs, or if half-shrubs, pubescence below not spreading-hirsute (except *T. gracilis*).

Flowers 8-merous ..... *T. octopetala, T. pulcherrima.*

Flowers 4–6-merous.

Flowers bracted at calyx-base, the calyx (7) 9–10 mm. long, or if only 5–6 mm. long, equaled by the lobes.

Shrubs.

Stamens glabrous; petioles short.....*T. aspera.*

Stamen connective pilose; petioles often 7–10 mm. long.
T. Mathaei.

Herbaceous, at least above, spreading-hirsute below.
T. gracilis.

Flowers if basally bracted, caducously; pedicel bracts, if present, small but sometimes extending to calyx tube, this then often only 3–4 mm. long.

Flower buds involucrately bracted, the bracts caducous, the calyx lobes deciduous.

Pubescence of bracts and calyx appressed.

Calyx lobes about half as long as tube; flowers purple.

Inflorescence several-flowered, exceeding the leaves.
T. stenocarpa.

Inflorescence few-flowered, exceeded by the leaves.
T. coronata.

Calyx lobes and tube subequal; flowers greenish.
T. virescens.

Pubescence of calyx arcuate, spreading.....*T. ochypetala.*

Flower buds ebracteate, in any case not involucrately (cf. *T. stenocarpa* and *T. ochypetala* with bracts promptly caducous); calyx lobes persistent (cf. the semi-herbaceous *T. gracilis*).

Stamens very unequal, the connective of the longer produced 2.5-several mm.; pubescence of the branchlets widely spreading, those of the calyx, if present, often glandular.

Leaves glabrous and smooth above.....*T. laevis.*

Leaves more or less but always distinctly setulose above.

Calyx lobes short, inconspicuous.

Pubescence all eglandular, the branches long-villous.
T. fulvipilis.

Pubescence at least in part glandular.

Calyces and peduncles glandular, the branches eglandular.

Calyx glabrate or sparsely setulose.
T. pleromoides.

Calyx densely hirsutulous.....*T. brevisepala.*

Calyces eglandular, peduncles and branches glandular.....*T. rhynchantherifolia.*

Calyx lobes prominent, more or less foliose.

Pubescence short, stiff.....*T. cymosa.*

Pubescence long, rather soft.....*T. laxa.*

Stamens subequal or if more or less unequal the connective of the larger produced only 1–2 mm.; pubescence of the branchlets appressed or subappressed, strigose-setulose except the first three species.

Branchlets shortly and densely villous-hirsutulous, the trichomes spreading-ascending.

Pubescence in part glandular....*T. rhynchantherifolia.*

Pubescence eglandular.

Upper petioles to 1 cm. long; pubescence villous. *T. mollis.*

Upper petioles to 2 cm. long; pubescence hirsutulous. *T. dimorphylla.*

Branchlets strigose-setulose, the trichomes closely appressed or if rather loose relatively few.

Pubescence of calyces and branchlets subappressed-ascending; calyx lobes flexuous, subulate, as long or longer than the tube.....*T. longifolia.*

Pubescence at least of the branchlets closely appressed; calyx lobes firm or foliose.

Calyx lobes conspicuous, foliose, the tube abundantly strigose or setulose; shrubs.

Leaves several cm. long.....*T. calycina.*

Leaves 2–2.5 cm. long.....*T. echinata.*

Calyx lobes small or minute, usually much shorter than the tube, this often lightly pubescent or plants half-shrubs.

Calyx eglandular; pedicels short.

Calyx appressed-strigose, longer than broad.

Leaves rather sparsely asperous-setulose on both sides.

Calyx lobes linear; shrub....*T. asperifolia.*

Calyx lobes ovate; half-shrub.*T. pentamera.*

Leaves pilose or short-villous, at least beneath.
Flowers crowded; leaves rounded to the scarcely acute base.
Calyx fusiform, constricted above. *T. decora.*
Calyx campanulate.....*T. Weberbaueri.*
Flowers laxly borne, few; leaves somewhat narrowed to acute base. *T. Solmsii.*
Calyx arcuately setulose, as broad or broader than long; half-shrub.....*T. Gayana.*
Calyx somewhat glandular; pedicels, except in *T. incarum*, elongate.
Leaves sparsely setulose on both sides, narrow.
Leaves 5–8 mm. wide; anther-connective conspicuous.....*T. stenophylla.*
Leaves 12–25 mm. wide; anther-connective short.....*T. stenopetala.*
Leaves villous-strigillose beneath, ample. *T. incarum.*

Tibouchina aspera Aubl. Pl. Guian. 1: 446. *pl. 177.* 1775; 238.

Branchlets densely scaly-scabrous (the scales long); petioles 2–5 mm. long; leaves rigid, 5-nerved, usually about 5 cm. long, 2 cm. wide, the midnerve deeply impressed above, subcordate at base, acuminate, sparsely, minutely and closely adnate, appressed-setulose but lustrous above, similarly beneath with the trichomes coarser, not so close appressed, especially on the nerves; flowers 5-merous, congested, conspicuously bracted, the outer pair of bracts 5–7 mm., the inner 8–10 mm. long; calyx tube 7–9 mm. long, the persistent rigid lobes a little shorter; petals 1.5 cm. long; stamens glabrous, the anthers long-attenuate, subulate; style 14–16 mm. long. —*T. Spruceana* Cogn., 239, from the upper Amazon, has 3-nerved narrow leaves and petals 2–2.5 cm. long. Illustrated (flower), Triana, Trans. Linn. Soc. 28: *pl. 3.*

San Martín: Tarapoto, *Spruce 4585; Williams 7648* (det. Gl.). Cerro de Moyobamba, *Stuebel* (det. Cogn.). To British Guiana.

Tibouchina asperifolia Cogn. Bot. Jahrb. 42: 137. 1908.

Branches obscurely tetragonous, shortly appressed-setulose; petioles 3–6 mm. long; leaves broadly lanceolate, little narrowed at

base, acute or shortly acuminate, entire, rather sparsely appressed-setulose on both sides, the larger 5-nerved, 4–7 cm. long, 12–18 mm. broad; pedicels 2–5 mm. long; calyx long- and densely appressed-setose, eglandular, the tube ovoid-campanulate, 3–4 mm. long, the linear, subulate lobes 2–2.5 mm. long; petals purplish, ciliate, 7–8 mm. long; stamens somewhat unequal, glabrous, the connective very shortly produced; style filiform, glabrous, 1 cm. long.—Shrub 5 dm. high. Allied to *T. lanceolata* Cogn., 262, of Bolivia, Sect. *Diotanthera*. F.M. Neg. 16727.

Huánuco: South-west of Monzón, prov. Huamalies, *Weberbauer 3357*, type.

Tibouchina brevisepala Cogn. Bot. Jahrb. 42: 135. 1908.

Shrub 2 meters high, the younger branches rather sparsely setulose, with short, curved trichomes; petioles slender, 1–2 cm. long; leaves oblong-lanceolate, abruptly acutish at base, acute or shortly acuminate, subentire, subappressed-setulose above, rather sparsely shortly pilose beneath, membranous, the larger 5-nerved, 6–10 cm. long, 2–3 cm. broad; pedicels, as the calyx at base, shortly glandular hirsute, the former 5–7, the latter 6 mm. long, its lobes scarcely 1 mm. long; petals lilac, very shortly ciliate, about 12 mm. long; stamens strongly unequal, glabrous, the connective of the larger produced 5–6 mm.; style to 14 mm. long.—Section *Diotanthera*.

Cuzco: Yanamanchi, Cuzco to Santa Ana, *Weberbauer 4965*, type.

Tibouchina calycina Cogn. Bot. Jahrb. 42: 135. 1908.

Branchlets densely appressed-setulose; petioles 8–12 mm. long; leaves bright green above, densely bullate-strigose, cinereous beneath with a dense short pilosity and markedly foveolate, 7–10 cm. long, 2.5–3.5 cm. wide, the 7 nerves of the larger prominent; pedicels stout, 1–2 cm. long, solitary or ternate; calyx densely appressed-setulose, 8–10 mm. long, the coriaceous lobes to twice as long; petals purple, glabrous, 3 cm. long; stamens rather unequal, glabrous, the connective produced 1 or 2 mm.; style glabrous, 2 cm. long.—The var. *parvifolia* Cogn. has leaves 5–7 cm. long, 1.5–2 cm. broad, the flowers smaller. Affine *T. laxa* Cogn. Section *Diotanthera*. F.M. Neg. 16731.

Puno: Sandía, 2,400 meters, *Weberbauer 650*, type.—Cuzco: Santa Ana, *Weberbauer 5008*, the var.

Tibouchina clinopodifolia (DC.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 411. 1885; 274. *Chaetogastra clinopodifolia* DC. Prodr. 3: 133. 1928.

Stems herbaceous, many, decumbent-ascending, long and sparsely hispid, few-several dm. long; petioles to 1 cm. long; leaves oblong-ovate, thin, serrate, to 4 cm. long, 1.5–2.5 cm. broad; flowers few, the glabrous petals 6–7 mm. long, the calyx tube half as long, the lobes shorter, persisting; anthers obliquely truncate at tip, dehiscent by a large pore.—Section *Purpurella*. Gleason has suggested that this may merit generic recognition. F.M. Neg. 6349.

Huánuco(?): *Haenke*. Brazil.

Tibouchina coronata (Triana) Cogn. in Mart. Fl. Bras. 14, pt. 3: 307. 1885; 204. *Pleroma coronatum* Triana, Trans. Linn. Soc. 28: 41. 1871.

Petioles 1–1.5 cm. long; leaves coriaceous, oblong-lanceolate, 3–5-nerved, hispid-setulose above, densely tomentose beneath, 5–8 cm. long, 1.5–2.5 cm. broad; pedicels to 1 cm. long, the two bracts very thin, broadly ovate, obtusish, 1 cm. long; petals purple, 2–3 cm. long; calyx tube 6–7 mm. long, the broadly triangular, deciduous calyx lobes 3–4 mm. long.—The calyx pubescence is not rigid. Section *Involucralis*. F.M. Neg. 26104.

Amazonas: Chachapoyas, *Mathews 3211*.

Tibouchina cymosa Cogn. Bot. Jahrb. 42: 134. 1908.

Branchlets, petioles and short cymes densely pubescent, with short, spreading eglandular trichomes (typically stiff-barbellate); petioles 0.5–1 cm. long; leaves submembranous, broadly ovate, rounded at base, acute, minutely serrulate, setulose above, densely villous beneath, the larger 7-nerved, 3–5 cm. long, 2–3.5 cm. broad; calyx tube 8–10 mm. long, the ovate-lanceolate lobes nearly as long; petals violet, shortly ciliolate, 2.5 cm. long; stamens very unequal, glabrous, the connective produced, 1.5–2 or 3–4 mm. long; style glabrous, 2 cm. long.—Allied to *T. mollis*. *Weberbauer 6339* referred here by Markgraf but with pilose stems, the trichomes ebarbellate, probably is rather *T. mollis* or *T. laxa*. Section *Diotanthera*. F.M. Neg. 16740.

Cajamarca: Below San Miguel, 2,500 meters, *Weberbauer 3911*, type.

Tibouchina decora Gleason, Bull. Torrey Club 58: 218. 1931.

Branches, leaves above and leaf nerves beneath densely strigose with subulate or papillose-based curved trichomes; petioles 7–11 mm.

long; leaves ovate-oblong, entire, rounded at base, acute, 5-nerved, 3.5–5.5 cm. long, about 2.5 cm. broad or narrower, velutinous above and softly villous beneath between the nerves; cymes many-flowered, the bracts linear-lanceolate, about 1 cm. long; calyx narrowly campanulate, densely strigose as the longer pedicel, 7 mm. long, the sepals little shorter; stamens glabrous, the anthers subequal, the connective shortly produced, anteriorly bilobed; style glabrous, about 15 mm. long.—A shrub to about 2 meters high with magenta flowers, the petals freely ciliate, 12 mm. long.—Junín specimens det. Gleason. Section *Diotanthera*.

Ayacucho: In thickets at Aina, 700 meters, (*Killip & Smith 22700*, type).—Junín: Between 680 and 2,400 meters, (*Killip & Smith 24230; 24791; 24979*). Chanchamayo Valley, *Schunke 376; 381; 346; 1516; 1596*. La Merced, *5469*.

Tibouchina dimorphylla Gleason, Bull. Torrey Club 54: 27. 1927.

Branchlets sharply angled, thinly spreading-pubescent; petioles 3–4 cm. long; leaves ovate, acute, minutely denticulate, the largest 18 cm. long, nearly half as wide, 5-nerved or the upper ones more cordate at base, 7-nerved, their petioles 8–15 mm. long, becoming bullate and sparsely subappressed-setulose above, thinly and finely pubescent beneath, the trichomes on the nerves stouter; inflorescence compact; calyx 5 mm. high, subequaled by the lobes, densely hispid, with incurved-ascending trichomes; petals 10–12 mm. long, ciliate; connective prolonged 1 mm. in the larger stamens, extended into 2 appendages; style 10 mm. long.—The leaves on the flowering branches are 6.5–10 cm. long. Section *Diotanthera*.

Cuzco: Pillahuata, *Pennell 14109*, type; *14092*. Without locality on Field Museum sheet, *Weberbauer 6926* (det. Gl.).

Tibouchina echinata (R. & P.) Cogn. Melast. 266. 1891. *Rhexia echinata* R. & P. Fl. Peruv. 3: 85. *pl. 319*. 1802.

Branchlets closely appressed-setulose; petioles 2–5 mm. long; leaves rigid, 5-nerved, mostly 2–3 cm. long, 7–9 mm. wide, becoming harshly appressed-callous-echinate above, appressed-setulose on the nerves and hirsutulous between the nerves beneath; flowers nodding; petals 2 cm. long or longer; calyx tube in fruit densely bullate-echinate, the little shorter lanceolate lobes appressed-setulose without, glabrous within, about 1 cm. long; stamens subequal, glabrous, the connective shortly produced.—Section *Diotanthera*. F.M. Neg. 26105.

Lima: *Née.*—Huánuco: Muña, *Ruiz & Pavón,* type. Huacachi, near Muña, *3891.* Between Río Marañón and Río Monzón (*Weberbauer 3369a;* 253).

Tibouchina fulvipilis Cogn. Bot. Jahrb. 50: Beibl. 111: 31. 1913.

Younger branchlets, petioles and peduncles clothed with spreading, rigid trichomes; petioles 1–2 cm. long; leaves ovate-lanceolate, obsoletely crenulate, submembranous, 5-nerved, sparsely hirtellous above and pilose beneath, 6–9 cm. long, 2–4 cm. broad; flowers cymose on pedicels 5–15 mm. long; petals 1.5 cm. long; calyx eglandular, pubescent only at base, 5–6 mm. long, the lobes 1–1.5 mm. long; stamens unequal, glabrous, the anther-connective 1.5 or 4–5 mm. produced; style 11 mm. long. Var. *scrobiculata* has leaves bullate above, scrobiculate beneath.—Section *Diotanthera.*

Ayacucho: Prov. Huanta, 2,800 meters, erect shrub, *Weberbauer 5619,* type; *5625* (var.).

Tibouchina Gayana (Naud.) Cogn. Melast. 253. 1891. *Micranthella Gayana* Naud. Ann. Sci. Nat. sér. 3. 13: 350. 1849.

Branches densely or sparsely appressed-setulose; leaves ovate, subacute at base, shortly acuminate, 5 (–7)-nerved, thin, finely appressed-hispid above, less so beneath, 4–6 cm. long, about 2 cm. broad; calyx tube subglobose, 4 mm. long, the lobes 2–3 mm. long, densely hirsute; petals nearly 1 cm. long; connective shortly produced, style 8–9 mm. long.—A slender, branching plant, more or less woody at base. Section *Diotanthera.* Illustrated, Bot. Mag. *pl. 6345.* F.M. Neg. 36163.

Cuzco: *Gay,* type.—Puno: San Gabán, *Lechler 2182.* Valley of Sandía, 2,300 meters, *Weberbauer 512;* 237.

Tibouchina gracilis (Kunth) Cogn. in Mart. Fl. Bras. 14, pt. 3: 386. 1885; 243. *Rhexia gracilis* Bonpl. Rhex. 138. *pl. 52.* 1823.

Simple, erect, pilose-setose herb (often lignescent at base) with lanceolate or ovate-lanceolate 5-nerved leaves often about 7 cm. long, 1 or 2 cm. wide, subsessile or on petioles a few mm. long; flowers glomerate, shortly bracteolate, the petals 1–2 cm. long; calyx tube 5–6 mm. long, the setulose lobes as long or longer; stamens glabrous; style to 2 cm. long.—Highly variable in size and character of foliage. Section *Simplicicaulis.* Illustrated, Bot. Mag. *pl. 3481.*

San Martín: Tarapoto, *Mathews 3218; Spruce.* Paraguay to the West Indies.

Tibouchina grossa (L. f.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 297. 1885; 274. *Melastoma grossa* L. f. Suppl. 236. 1781.

Densely branched shrub 2–4 meters high, with ovate, obtusish 5-nerved leaves harshly strigose above, villous or hispidulous beneath, 2–4 cm. long, half as wide, on petioles 4–8 mm. long; cymes few-flowered; calyx tube 6–7 mm. long, densely appressed-setose, equaled by the triangular-lanceolate, acuminate lobes; petals 2.5–3 cm. long, villous without; style stout, to 3.5 cm. long.—Section *Purpurella*. Illustrated, Bonpl. Rhex. *pl. 1*.

Amazonas: Chachapoyas, *Mathews* (det. Cogn.). Ecuador; Colombia.

Tibouchina incarum Gleason, Amer. Jour. Bot. 26: 634. 1939.

Widely branched shrub to 1.5 meters high, the 4-angled stems closely strigose; petioles slender, 1–2 cm. long; leaves thin, closely substrigose above, paler and softly villous on the veins and veinlets beneath, minutely serrulate, ovate-lanceolate to 11 cm. long, 4.5 cm. wide, acuminate, abruptly cuneate at base, 7-plinerved; panicles ample, to 2.5 dm. long, glandular-hirsute; pedicels 2 mm. long; flowers 6-merous, the broadly obovate, bright pink petals 8 mm. long and nearly as wide; sepals recurved, 2.6 mm. long; stamens nearly isomorphic but the filaments of two lengths, 4.7 or 3.7 mm.; ovary densely bristly apically.—Allied to *T. Gayana* with smaller leaves, merely acute at base, larger sepals and the hypanthium not glandular.

Cuzco: Machu Picchu (*Balls B6817*, type); grassy hillside (*Stafford 772; 791*); open brush formations, 2,200 meters (*West 6456*).

Tibouchina laevis Cogn. Bot. Jahrb. 42: 136. 1908.

Tetragonous branchlets annulate-enlarged at nodes, glabrous as the petioles, peduncles, calyces and leaves above; petioles strongly flattened, 3–4 mm. broad; leaves rigid, narrowly ovate, rounded at base, acute, minutely setulose-dentate, scarcely setulose beneath, 5-nerved, 4–5 cm. long, half as broad; pedicels 5–10 mm. long; calyx tube narrowly campanulate-ovoid, acute at base, 5–6 mm. long, the narrowly triangular lobes half as long; petals yellow, glabrous, 8–9 mm. long; stamens very unequal, glabrous, the connective of the larger produced to 3 mm.; style glabrous, 11 mm. long.—Allied to *T. pleromoides*. Section *Diotanthera*.

Puno: Between Chunchusmayo and Sandía, *Weberbauer 1139*, type.

Tibouchina laxa (Desr.) Cogn. Bull. Acad. Belg. sér. 3. 14: 933. 1887; 250. *Melastoma laxa* Desr. in Lam. Encycl. 4: 41. 1797.

Branches hirsute, the trichomes spreading; petioles 5–10 mm. long; leaves ovate, somewhat cordate, 7-nerved, only sparsely setulose on either side, foveolate beneath, 3–5 cm. long, 2–3.5 cm. broad; flowers few, rather crowded, the purple or white petals 2 cm. long; calyx tube 7–8 mm. long, equaled or exceeded by the lobes; stamens glabrous; connective moderately produced; style 1.5 cm. long.—Var. *villosissima* Cogn. has broadly ovate leaves, densely softly pilose both sides, the branches and calyces villous. Section *Diotanthera*. Illustrated, Bot. Mag. *pl. 5629*.

Piura: Near San Felipe, *Bonpland*.—Amazonas: Chachapoyas, *Williams 7573* (det. Gl.). Without locality, *Mathews 1275; J. Jussieu; Ruiz & Pavón*, this the var. (det. Markgr.).—Cajamarca: Shrubby hillsides near Socota, 2,600 meters, *Stork & Horton 10083*. Ecuador.

Tibouchina longifolia (Vahl) Baill. Adansonia 12: 74. 1877; 264. *Rhexia longifolia* Vahl, Eclog. Amer. 1: 39. 1796 et Icon. Pl. Amer. 2: *pl. 15*. 1799. *R. flexuosa* R. & P. Fl. Peruv. 3: 85. *pl. 320*. 1802.

More or less suffrutescent, often only a few dm. high, the branches more or less densely spreading-setulose; leaves rather narrowly lanceolate, usually less than 1 dm. long, 1–2.5 cm. wide, somewhat appressed-pilose, panicle leafy; calyx tube 3 mm. long, the flexuous lobes as long or longer; petals white, 5–6 mm. long, equaled by the style; stamens glabrous, subequal, the connective scarcely produced.—A form with glandular calyx is var. *simulans* Macbr. Field Mus. Bot. 4: 174. 1929. Section *Diotanthera*. F.M. Neg. 21206. Illustrated, DC. Mém. Mélast. *pl. 8*.

Huánuco: Río Huallaga Cañon, *4237*. Churubamba region, *Mexia 8212* (det. Gl.). Pozuzo, *4556*, the var.; *Ruiz & Pavón*. Piedra Grande, *3683*. Pampayacu, *Kanehira 81; Poeppig 1002*. Casapi, *Mathews 1721* (*Fielding 1721*). Cuchero, *Dombey; Ruiz & Pavón*. Chinchao and Muña, *Ruiz & Pavón*.—Junín: La Merced, *5300*, the var.; *Killip & Smith 23567; 23789; 24968; 25197; 25278* (all det. Gl.).—Ayacucho: *Killip & Smith 22499; 23075* (det. Gl.).—San Martín: Tarapoto, *Spruce; Williams 6364; 7151* (det. Gl.).—Loreto: Puerto Arturo, *Killip & Smith 27848; 29216* (det. Gl.). Pongo de Manseriche, *Mexia 6207*. Yurimaguas, *Williams 4610*.—Cuzco: Valle de Vilcanota, *Mexia 8091* (det. Gl.). Paucartambo, 2,700 meters, *Vargas 94*. To Mexico and the West Indies. "Mullaca."

Tibouchina Mathaei Cogn. in Mart. Fl. Bras. 14, pt. 3: 380. 1885; 241. *Lasiandra lepidota* Naud. Ann. Sci. Nat. sér. 3. 13: 155. 1849, not *T. lepidota* (Bonpl.) Baill.

Branchlets and leaves beneath clothed with narrowly oblong squamate fringed trichomes; petioles 7–10 mm. long; leaves oblong-ovate, to 1 dm. long and about half as wide, often smaller, 5-nerved, densely appressed and finely strigillose-setulose above, appressed-squamulose or lepidote beneath, the margins ciliate, with coarser trichomes similar to those on the nerves; calyx tube 8–9 mm. long, the lobes half as long, densely squamate with elongate, lanceolate scales; petals about 1.5 cm. long; connective barbate at juncture with filaments.—Simulates *T. aspera*. Section *Barbigeri*. F.M. Negs. 26108; 36167.

San Martín: Moyobamba, *Mathews 1267*, type; *Weberbauer 4493;* 290. Costa Rica.

Tibouchina mollis (Bonpl.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 349. 1885; 249. *Rhexia mollis* Bonpl. Rhex. 50. *pl. 19*. 1823.

Branchlets as many as the leaves, densely appressed or sub-appressed, pilose-hirsute; petioles to 1 cm. long; leaves rather thin, 5-nerved with 2 outer, fainter nerves, ovate, 5–9 cm. long, 2.5–4 cm. wide; calyx densely hirsute, 5–6 mm. long, equaled by the linear subulate lobes; stamens subequal, glabrous, the narrow anthers obtuse; petals about 12 mm. long; style 8–10 mm. long.—Section *Diotanthera*. The leaves are soft to the touch beneath, the calyces soon globose. Cf. *T. Rusbyi*. F.M. Neg. 36168.

Peru(?): Without locality, *Rivero* (*MacLean*).—Ayacucho: Prov. Huanta (*Weberbauer 5642*, det. Cogn.). Ecuador; Colombia.

Tibouchina ochypetala (R. & P.) Baill. Adansonia 12: 75. 1877; 213. *Rhexia ochypetala* R. & P. Fl. Peruv. 3: 86. *pl. 321*. 1802. *T. Tessmannii* Markgr. Notizbl. Bot. Gart. Berlin 9: 1139. 1927.

Branches more or less acutely tetragonous, closely appressed-strigose with rigid trichomes; petioles 0.5–1.5 cm. long; leaves rather rigid, oblong-lanceolate, 6–8 cm. long, 1–2 cm. wide, rather sparsely appressed-hispidulous above, more densely appressed-pubescent beneath; panicles few-flowered, appressed-setulose; bracts ovate, 1–1.5 cm. long; petals 2–3 cm. long; calyx tube stiffly setose-pubescent, equaling the oblong lobes, these 5–6 mm. long; larger anthers 1 cm. long, the smaller about 6 mm. long, the connective anteriorly glandular-pilose; filaments more or less setose; style glabrous except at base.—*T. Tessmannii* Markgr., allied by the author

to *T. nervulosa* Cogn., a species with glabrous filaments and style, does not seem to me to be separable. A showy shrub usually 2–4 meters high, but often rather open in growth; a 7-meter tree (Mexia). Section *Involucrales*. F.M. Neg. 38258.

Huánuco: Vilcabamba, Hacienda on Río Chinchao, *5006; 16800* (*Tessmannii*). Puyash, *Sawada 95* (det. Gl.). Churubamba, *Mexia 8204* (det. Gl.). Chinchao, Cuchero, Pillao, *Ruiz & Pavón*, type; *Poeppig 100; 1003*. Between Río Marañón and Monzón, (Weberbauer, 256).—Junín: La Merced, *5550*. Hacienda Schunke, *5726*.—San Martín: Valley of the Monzón, 1,900 meters, (Weberbauer, 284). Tarapoto, *Spruce 4000; Williams 5953; 6385; 6492* (det. Gl.). Moyobamba, *Mathews 1272* (*Fielding*).—Amazonas: Chachapoyas, *Mathews 3214; Weberbauer 4363* (det. Cogn.).—Loreto: Bristol, near Mouth of Río Pastaza, on Río Marañón, *Tessmann 3788*, type, *T. Tessmannii*. Cerro de Escaler, 1,300 meters, *Ule 6364*. Pumayacu, *Klug 3137* (det. Gl.). Also *Killip & Smith 28618; 29210* (det. Gl., *T. Tessmannii*). Ecuador. "Chinchincca," "pichuquita," "machusacha pichirina," "Santa Rosa sisa."

Tibouchina octopetala Cogn. Bull. Torrey Club 17: 57. 1890; 273.

Densely but rather shortly hirsute shrub or the leaves shortly villous beneath; petioles 2–3 cm. long; leaves 5-nerved with also a pair of faint marginal ones, rounded at base, acute, entire, submembranous, about 1 dm. long or longer, 5–7 cm. broad; pedicels bibracteate above the middle, the obovate purplish bracts shortly villous, 1 cm. long; calyx tube about 8 mm. long, densely strigillose-setose, equaled by the narrow lobes; petals purple-violet, 12–15 mm. long; stamens glabrous, the longer filaments and anthers 7.5–8 mm. long; style hirsute below, 1 cm. long.—Section *Octomeris*, to which also only belongs *T. pulcherrima*.

Cuzco: Near Río Yanamayo, *Pennell 14039*.—Puno: Mountains of Yuncacoya, *Weberbauer 1140;* 242. Bolivia.

Tibouchina pentamera (Ule) Macbr., comb. nov. *Comolia pentamera* Ule, Notizbl. Bot. Gart. Berlin 6: 352. 1915.

Stems slender, sparsely subappressed-strigose; leaves narrowly ovate, long-acuminate, shortly petioled, thin, 3-nerved, sparsely appressed-setose, 2.5–3.5 cm. long, 11 mm. wide or narrower; calyx tube densely strigose-setose, 4–5 mm. long, 3–4 mm. broad, the ovate lobes densely setose on the margins, 3.5 mm. long; petals 5, white, narrowed below, retuse, 7 mm. long; stamens subequal, 5 and 7 mm.

long, the short connective 2-lobed; ovary 5-celled, glabrous (fide Ule), style 8 mm. long; seeds cochleate. A half-shrub 1–4 dm. high, little branched, subdecumbent at the woody base.—Gleason in Herb. Dahlem has written on the type sheet "Why is this a *Comolia?*" but unfortunately he did not answer his query; when the type was photographed I noted in my manuscript "probably a *Tibouchina*," but did not study it further. From description and photograph it seems to be allied to *T. lanceolata* Cogn., 262, Bolivian, or to *T. stenopetala*. The ovary, if actually glabrous, is an aberrant character for *Tibouchina*, but the ovary may be either glabrous or setulose in other groups so it is not in itself a generic character. In the glabrous ovary *T. pentamera* could be traced to *Comolia*, from which its facies as well as its 5-merous flowers exclude it; it is distinct from *Acisanthera* and *Pterolepis* in the character of its pubescence. F.M. Neg. 16844.

Loreto: Cerro de Escaler, *Ule 6742*, type.

Tibouchina pleromoides (Naud.) Macbr. Field Mus. Bot. 4: 174. 1929. *Lasiandra pleromoides* Naud. Ann. Sci. Nat. sér. 3. 13: 131. 1849. *Pleroma maurocarpum* Triana, Trans. Linn. Soc. 28: 47. 1871. *Tibouchina maurocarpa* Cogn. Melast. 260. 1891.

Younger branches very shortly appressed-setulose; petioles 1–2 cm. long; leaves ovate-oblong, obscurely crenulate, 5-nerved, sparsely asperous-strigillose above, foveolate and sparsely strigillose beneath on the nerves, to about 1 dm. long and a third as broad; panicles few-flowered; petals red, ciliate, 1 cm. long; calyx tube 5–6 mm. long, glabrous, the minutely ciliate teeth 2–2.5 mm. long; stamens glabrous, very unequal, the connective of the larger long-produced.—The leaves often only 5–6 cm. long, 2–2.5 cm. wide, are bullate above, correspondingly foveolate beneath. Section *Diotanthera*. F.M. Neg. 32309.

Cuzco: *Gay*.—Junín: Pariahuanca, *Mathews 874*.—Apurímac: Abancay, 3,000 meters, *Vargas 420*.

Tibouchina pulcherrima Gleason, Bull. Torrey Club 54: 26. 1927.

Closely allied to *T. octopetala*, but with conspicuously purple pubescence, especially on the nerves of the leaves and the more open inflorescence; leaves narrowly ovate-oblong, 15–18 cm. long, 6–7.5 cm. wide, setose-ciliate, the upper surface densely conic-tuberculate, setose, the lower ashy with a spreading pubescence; pedicels 10–15

mm. long; longer filaments 7.5–8 mm. long, the appendages of the anther connective erect or nearly, 1.3 mm. long. Section *Octomeris*.

Cuzco: Cerro de Cusilluyoc, *Pennell 13971*, type.

Tibouchina rhynchantherifolia Cogn. Bot. Jahrb. 42: 134. 1908.

Younger branches, petioles and peduncles shortly glandular-pilose with spreading trichomes; petioles 1–2 cm. long; leaves membranous, puberulent-pilose on both sides, narrowly ovate, rounded at base, shortly acuminate, the larger 7-nerved, 7–11 cm. long, 3–4.5 cm. broad; panicles broadly pyramidal; calyx densely pilose but eglandular, the tube 4 mm. long, the lobes scarcely half as long; petals white, shortly glandular-ciliate, 5 mm. long; stamens strongly unequal, glabrous, the anthers 2.5 or about 4 mm. long; style 7–8 mm. long.—Affine *T. Rusbyi*, Section *Diotanthera*. F.M. Neg. 16185.

Puno: Between Sandía and Chunchusmayo, 1,500 meters, *Weberbauer 1062*, type.

Tibouchina Solmsii Cogn. Melast. 250. 1891.

Branches slender, nearly terete, the younger densely appressed-setulose; petioles 3–7 mm. long; leaves membranous, ovate-oblong, minutely serrulate, pilose on both sides, 2–3.5 cm. long, 9–17 mm. broad; flowers few or solitary; calyx tube setulose (the trichomes tuberculate at base), 3.5–4 mm. long, the long ciliate lobes 2 mm. long; petals ciliolate, 7–8 mm. long; stamens glabrous, subequal, the small anthers apically attenuate; style 6–7 mm. long.—Two collections are referred here with doubt; several Bolivian forms are too similar; the genus needs revision. Section *Diotanthera*.

Puno: San Gabán and Tatanara, *Lechler 2179; 2555*, types.—Huánuco: Villcabamba on Río Chinchao, *5195*(?).—Cuzco: Cerro de Cusilluyoc, rocky forest, flowers magenta, *Pennell 13992*(?).

Tibouchina stenocarpa (DC.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 344. 1885; 224. *Lasiandra stenocarpa* DC. Prodr. 3: 130. 1828.

Branches appressed-setulose; petioles 0.5–2 cm. long; leaves rigid-coriaceous, oblong, 8–12 cm. long, 2–4 cm. broad, 5-nerved, green but shortly strigose above, densely appressed-sericeous villous beneath; panicles ample; pedicel bracts 7–9 mm. long; petals 2–3 cm. long; calyx tube 7–9 mm. long, the lobes about half as long; filaments conspicuously villous-lanate; style glabrous, 2–2.5 cm. long, the ovoid capsule 8 mm. long.—A variety *boliviensis* Cogn. has the style pilose below. The single collection may be *T. coronata*, which

seems to be similar, although Cogniaux, following Triana, assigned the species to different groups. Section *Pleroma*. F.M. Neg. 26115.

Puno: Valley of the Sandía (*Weberbauer 1123;* 278). Brazil.

Tibouchina stenopetala (Griseb.) Cogn. Melast. 262. 1891. *Micranthella stenopetala* Griseb. in syn. ex Triana, Trans. Linn. Soc. 28: 46. 1871.

Branches slender, elongate, rather acutely angled, very slightly setulose; leaves thin, sparsely appressed-setulose above and beneath on the nerves only, 5–6 cm. long, half as wide, obscurely undulate-crenulate; panicle diffuse, few-flowered; petals 7 mm. long, long-cuneate at base; calyx slightly glandular-hirsute, the tube 4 mm. long, the teeth 1 mm. long; stamens glabrous, unequal, the connective short; style 5–7 mm. long.—A fragile membranous-leaved species, the fruiting calyx sharply 10-ribbed. Section *Diotanthera*. F.M. Neg. 6357.

Puno: San Gabán, *Lechler 2271*, type.

Tibouchina stenophylla Cogn. Bull. Torrey Club 17: 56. 1890; 257.

Slender-stemmed, the branches obtusely angled, weak, finely appressed-setulose; petioles 2–7 mm. long; leaves thin, narrowly lanceolate, entire, 3-nerved, subacute, 3–6 cm. long, 5–8 mm. broad; flowers few on filiform pedicels 5–8 mm. long; calyx tube 4 mm. long, the ciliate lobes 1 mm. long; stamens glabrous, strongly unequal, the connective of the larger long-produced; style 8–9 mm. long; capsule ovoid, 5 mm. long.—Section *Diotanthera*.

Loreto: Mouth of Santiago, Puerto Meléndez, *Tessmann 4795* (det. Markgr.). Bolivia.

Tibouchina virescens Cogn. Bot. Jahrb. 42: 133. 1908.

Allied to *T. coronata;* branches slender, obtusely angled, the old densely verrucose, the younger shortly and densely appressed-setulose; petioles 4–6 mm. long; leaves deep green above but appressed-strigillose, ashy-villous beneath, 4–6.5 cm. long, 10–17 mm. broad; bracts 4, rather coriaceous, acute, 7–8 mm. long; calyx densely appressed, long-setulose; lobes equaling the calyx tube, 7 mm. long.—Section *Involucrales*. F.M. Neg. 16807.

Junín: East of Palca, 3,100 meters, *Weberbauer 2475*, type.

Tibouchina Weberbaueri Cogn. Bot. Jahrb. 42: 136. 1908.

A 2-meter shrub with slender, glabrous branches; petioles, peduncles, calyces and leaves above shortly but densely appressed-

setulose; petioles 0.5–1 cm. long; leaves rather firm, green above, ashy-appressed-villous beneath, oblong or ovate-oblong, rounded at base, acute, 5-nerved, entire, 4–6 cm. long, 12–22 mm. broad; panicles short, leafy, rather densely flowered; pedicels 2–5 mm. long; calyx tube 4 mm. long, eglandular, the narrow, acute lobes about half as long; stamens very unequal, glabrous, the connective produced to 1.5 mm. on the larger anthers, these 5.5 mm. long; style filiform, glabrous, 12–14 mm. long.—Allied to *T. Orbignyana*. Section *Diotanthera*. F.M. Neg. 16808.

Cuzco: Near Santa Ana, 1,700 meters, *Weberbauer 5002*, type. Spreading shrub 1.5 meters high, with deep cerise flowers, 1,750 meters, Río Sambray, *Mexia 8056* (det. Gl.). Río Chaupimayo, *Soukup 569*.

14. ACISANTHERA P. Br.

Herbaceous or nearly, usually branched, the leaves small, the flowers 4–5-merous, axillary or terminal, few in short cymes, sometimes solitary. Stamens dimorphic, the anthers oblong to subulate, obtuse to rostrate; the connective of the larger prolonged and with 2 broad anterior lobes, that of the smaller similar but the lobes smaller or reduced to tubercles. Ovary free, 2–4-celled. Style slender, often bent. Seeds reniform or cochleate, minutely pitted.

Acisanthera quadrata Pers. Syn. Pl. 1: 477. 1805.

Usually well-branched annual with narrowly 4-winged or -angled smooth stems or these remotely glandular pubescent; leaves subsessile, ovate-oblong, finely denticulate, glabrous or glandular, 1–2 cm. long, half as wide; flowers axillary, solitary, on pedicels 1–3 mm. long, 4-merous; calyx campanulate, 2 mm. long, the triangular sepals about as long; petals roseate, 5–6 mm. long; connective of larger stamens and anthers subequal, the lobes 1 mm. long, the connective of the smaller basally tubercled.—Semisucculent plant of moist places.

Peru(?): *Pavón*(?), without locality (det. Cogn.). West Indies; Central America south to Panama.

15. ACIOTIS D. Don

Glabrous or sparsely pilose with 4-angled or -winged stems, more or less woody and often sprawling or herbaceous, the herbs usually delicate or succulent, their leaves membranous. Flowers small or nearly minute, sessile or subsessile, bracteolate, 4-merous,

borne in terminal panicles. Stamens equal or nearly, the connective shortly if at all prolonged, unappendaged or merely obscurely lobed or enlarged. Ovary 2-celled, the stigma truncate or capitate, the capsule thin-walled.—The leaves of some species are used for greens.

Anthers roundish, the connective little if at all produced; petioles rarely 1 cm. long except in *A. aequatorialis.*

Petioles 1.5–3.5 cm. long; branches angled, glandular-pilose. *A. aequatorialis.*

Petioles 3–8 (–10) mm. long.

Annual herbs.

Leaves ovate, 1–3 cm. wide..... *A. dichotoma.*

Leaves oblong-lanceolate, rarely 1 cm. wide.. *A. sphaerantha.*

Suffrutescent, the upper winged branches reddish-villous. *A. brachybotrya.*

Anthers oblongish or linear, the connective somewhat produced; petioles often about 1 cm. long to much longer except in *A. cordata.*

Leaves ovate-lanceolate, many more than twice longer than wide (sometimes cordate at base).

Flowers pedicellate; leaves 5-nerved, glabrous. *A. purpurascens.*

Flowers sessile; leaves (5) 7-nerved, at least with a few hairs above.

Petals 4–5 mm. long; acute and terminating in a bristle.

Petioles slender, sparsely pilose; petals shortly setose at tip.

Stems terete..... *A. longifolia.*

Stems angled..... *A. purpurascens.*

Petioles stout, densely hirsutulous; petals long-setose at tip..... *A. rubricaulis.*

Petals 7 mm. long, aristate..... *A. aristata.*

Leaves ovate, somewhat cordate and scarcely twice longer than wide.

Plants suffrutescent with reddish hirsute winged stems. *A. caulialata.*

Plants annual or woody only below, the stems often angled.

Leaves 7-nerved, the outer nerves faint; petioles 1–2 cm. long.

Panicle open, about as long as wide, the branches subsimple. *A. polystachya.*

Panicle oblongish, dichotomously branched..... *A. laxa.*

Leaves 5-nerved; petioles rarely 1 cm. long..... *A. cordata.*

Aciotis aequatorialis Cogn. in Mart. Fl. Bras. 14, pt. 3: 464. *pl. 105*. 1885; 301.

Herb 1–4 dm. high with somewhat glandular pilose, acutely angled branches and 5-nerved pilose leaves, these ovate, often somewhat cordate, acute, 2–5 cm. long, 1.5–3.5 cm. wide; panicles small, dichotomously branched, subcorymbose; pedicels 0.5–1 mm. long; calyx 2 mm. long; petals 3–4 mm. long, acutish, the style 3 mm. long; anthers ovoid-oblong.

Loreto: Sarayacu (*Huber 1497*). Yurimaguas, *Poeppig*. Brazil.

Aciotis aristata Ule, Notizbl. Bot. Gart. Berlin 6: 352. 1915.

Branches, these 4-sided but scarcely winged, petioles and panicles densely long-pilose; leaves oblong-lanceolate, 9–13 cm. long, 3.5–4.5 cm. wide, long-acuminate, 5–7-nerved, sparsely setose-pilose on both sides; calyx 5 mm. long, smooth; petals long-aristate at tip; connective long-produced, the anthers oblong-linear; capsule 4 mm. thick.—Except for the larger flower, it seems, from character, to be nearly *A. rubricaulis*. F.M. Neg. 16821.

Río Acre: *Ule 9667*, type.

Aciotis brachybotrya (DC.) Triana, Trans. Linn. Soc. 28: 51. 1871; 301. *Spennera brachybotrya* DC. Prodr. 3: 115. 1828.

Branches distinctly 4-winged and rather densely villous with long, usually reddish, crinkly trichomes, the small leaves typically glabrous and about 2 cm. long and wide or 3–4 cm. long and somewhat pilose, subrotund at base, acute; panicles small, dichotomously branched; pedicels scarcely 1 mm. long, about equaled by the bractlets; calyx and acute petals 2 mm. long, the style 1 mm. longer; capsule 2.5 mm. thick.

Junín: Pichis Trail, *Killip & Smith 25892* (det. Gl.). Ecuador; Brazil.

Aciotis caulialata (R. & P.) Triana, Trans. Linn. Soc. 28: 52. 1871; 308. *Arthrostemma caulialata* R. & P. Fl. Peruv. 4: *pl. 327*. 1802. *Spennera panicularis* Naud. Ann. Sci. Nat. sér. 3. 14: 148. *pl. 5*. 1850. *S. caulialata* Naud. l.c. 149.

Stems distinctly suffrutescent below, conspicuously 4-winged above, hirsutulous-furfuraceous, the trichomes, as those of the long (2–3.5 cm.) petioles red, firm; leaves ovate, often 3–5 cm. long, 2–3 cm. wide, rather evenly and densely pilose on both sides with long hairs, especially beneath on the 5 nerves; panicles pyramidal, about 1 dm. wide at base and half again as long; petals ovate,

acuminate; anther connective long-produced.—The branchlets with the wings are 4–5 mm. wide. F.M. Neg. 29489.

Lima: *Gay.*—San Martín: Moyobamba, *Mathews 1279; Lechler 2186.*—Huánuco: Pueblo Nuevo, *Ruiz & Pavón*, type.

Aciotis cordata (Vell.) Macbr., comb. nov. *Melastoma cordata* Vell. Fl. Flum. 178. 1825; Icones 4: *pl. 114.* 1827. *Spennera dysophylla* Benth. in Hook. Journ. Bot. 2: 296. 1840. *Aciotis dysophylla* (Benth.) Triana, Trans. Linn. Soc. 28: 52. 1871; 310.

Annual herb with glabrate tetragonous stems and sparsely appressed, pilose, 5-nerved, ovate leaves, these to 4 cm. long, 2.5 cm. wide or smaller, often cordate at base; panicles to about 3 cm. long and as wide at base, the minutely glandular, campanulate calyx 1.5 mm. long, its pedicel scarcely 1 mm. long; petals 2 mm. long, oblong-lanceolate; anthers oblong, the connective short; capsule ovoid, 2 mm. long.—Lacks the glandulosity of the similar and to be expected *A. viscosa* (Bonpl.) Triana, with ovoid calyx and petals 3 mm. long. Cogniaux questioned the identity of the Vellozo plant but apparently knew only the plate; Bentham set the precedent of accepting identifiable Vellozo species.—Illustrated, Mart. Fl. Bras. 14, pt. 3: *pl. 106.*

Amazonas: Nazareth, *Osgood 16.*—Loreto: Iquitos, *Killip & Smith 26888; Klug 1188* (det. Gl.); *Williams 1426; 1447.* Pebas, *Williams 1710; 1712.* Río Mazán, *Schunke 213.* To Ecuador and British Guiana.

Aciotis dichotoma (Benth.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 460. *pl. 104.* 1885; 299. *Spennera dichotoma* Benth. in Hook. Journ. Bot. 2: 295. 1840.

Herbaceous, rarely more than a dm. or two high, the narrowly 4-winged branches glandular-pilose; petioles typically rarely more than 5 mm. long; leaves ovate-oblong, obtusish, soft, finely crenulate-serrulate, glabrous both sides, 3-nerved, 2–3 cm. long, 1–1.5 cm. wide; panicles small; pedicels scarcely 0.5 mm. long; calyx 1.5 mm. long; petals acutish, reddish, 1.5–2 mm. long; anthers orbicular to broadly ovate, all alike; style capitate at tip, 1 mm. long; capsule 1.5 mm. thick.—F.M. Neg. 16822.

Loreto: Upper Río Blanco, *Tessmann 3032* (det. Markgr.). To the Guianas.

Aciotis laxa [Richard] Cogn. in Mart. Fl. Bras. 14, pt. 3: 476. *pl. 108.* 1885; 309. *Spennera laxa* [Richard] DC. Prodr. 3: 116.

1828. *A. indecora* (Bonpl.) Triana, Trans. Linn. Soc. 28: 52. 1871, fide Gleason.—*Rhexia indecora* Bonpl. Rhex. 131. *pl. 49*. 1823.

Suffrutescent, robust, sulcately stemmed plant, sometimes a meter long; petioles 1–2 cm. long or longer; leaves 5–7-nerved, long-acuminate, cordate-ovate, thin, glabrate, to 6 cm. long, 4 cm. wide or larger; panicles to 8 cm. long or longer, but often only about 3 cm. wide; pedicels obsolete; bractlets subulate; calyx 2.5 mm. long, the tube campanulate-ovoid; petals 2.5 mm. long, the style twice as long; capsule ovoid, 3.5 mm. long.—A form with petioles to 5 cm. long, the scarcely cordate leaves 9–11 cm. long, 6–7 cm. wide, was named var. *macrophylla* Cogn.

Loreto: Yurimaguas, *Poeppig*. Manfinfa, Upper Nanay, *Williams 1179; 1180* (det. Gl.).—Puno: San Gabán, *Lechler 2404* (the var.). Brazil; Guiana.

Aciotis longifolia (Mart.) Triana, Trans. Linn. Soc. 28: 52. 1871; 305. *Spennera longifolia* Mart. ex DC. Prodr. 3: 115. 1828.

Slender, typically herbaceous, with purplish subterete stem several dm. high; leaves narrowly oblong-lanceolate, long-acuminate, rounded at base, mostly with a few hairs on the upper surface, otherwise glabrous, very thin, 10–13 cm. long, 3–4 cm. wide; petioles to 3 cm. long; panicles diffuse; flowers sessile; bractlets 1–2 mm. long; calyx finally glabrous, 3 mm. long, the petals 4 mm. long, the style as long; capsule 4 mm. thick.—The var. *glabra* Huber, Bol. Mus. Goeldi 4: 595. 1906 is woody at base, the branches glabrous.—Illustrated, Mart. Fl. Bras. 14, pt. 3: *pl. 106*.

Loreto: Cerro de Canchahuaya (*Huber 1475*, the var.). Brazil.

Aciotis polystachya (Bonpl.) Triana, Trans. Linn. Soc. 28: 52. 1871; 303. *Rhexia polystachia* Bonpl. Rhex. 98. *pl. 38*. 1823.

Similar to *A. laxa* but annual, with merely acute leaves, these 4–5 cm. long, 2.5–3 cm. wide, the petioles glandular-pilose; pedicels and lanceolate bractlets 1 mm. long; calyx 1.5 mm. long, the tube narrowly campanulate; petals 2 mm. long, the style as long, the capsule as thick.—The stems are densely reddish-brown-hispid, the trichomes long; the inflorescence open, the branches secundly flowered, about 6 cm. long and wide.—F.M. Neg. 36186.

San Martín: Near Tarapoto, *Spruce*. Lamas, *Williams 6362*.—Loreto: La Victoria, *Williams 2978*. Brazil.

Aciotis purpurascens (Aublet) Triana, Trans. Linn. Soc. 28: 52. *pl. 3*. 1871; 306. *Melastoma purpurascens* Aublet, Pl. Guian. 402. *pl. 154*. 1775.

Shrubby, the stems 4-angled, often strongly; leaves oblong-lanceolate, long-acuminate, slightly narrowed to the margined petioles, 5-nerved, glabrous on the surfaces, 6–8 cm. long or longer, 2–5 cm. wide below the middle; panicles elongate; pedicels and bractlets 1–2 mm. long; calyx 3 mm. long, the tube ovoid; petals and style 4 mm. long; capsule 3–4 mm. thick.—The var. *pellucida* Cogn. has petioles to 2 cm. long, leaves to 13 cm. long, 4–5 cm. wide, pellucid, the stem scarcely branched; the var. **martinensis** Macbr., var. nov. foliis supra parce pilosulis.—This last suggests *A. longifolia* and *A. rubricaulis* but it has the winged stems of *A. purpurascens* (*Williams 7493*, type).—Many other collections besides the following have been made.

San Martín: San Roque, *Williams 7493*. Near Moyobamba, *Klug 3319* (var. *martinensis*).—Loreto: Yurimaguas, *Poeppig 1837*, (var. *pellucida*). Mishuyacu, *Klug 144; 1489* (det. Gl.). Yurimaguas, *Williams 3813; 4739; 7848*. Near Iquitos, *Williams 1485; 1474; Killip & Smith 26958*. Río Mazán, *Schunke 146*. Pebas, *Williams 1688; 1930*. La Victoria, *Williams 2701; 2568*. Río Itaya, *Williams 38; 3209*. Florida, *Klug 2174*. Río Nanay, *Williams 334; 360; 406; 463; 803; 883; 1179; 1185; 1276*. "Yaco mullaca."

Aciotis rubricaulis (Mart.) Triana, Trans. Linn. Soc. 28: 52. *pl. 3*. 1871; 305. *Spennera rubricaulis* Mart. ex DC. Prodr. 3: 115. 1828.

Half-shrub with elongate sharply angled stems and oblong-lanceolate, acuminate leaves, somewhat pilose on both sides, their petioles densely hirsute; panicles elongate, narrowly pyramidal; calyx slightly glandular-pilose; petals shortly setose at tip, 4–5 mm. long, the style 3 mm. long; otherwise like *A. longifolia*, so it seems probable that there is only one variable species.—Illustrated, Mart. Nov. Gen. & Sp. 3: *pl. 255*.

San Martín: Mount Campana (*Spruce*). Brazil to Guiana and Central America.

Aciotis sphaeranthera (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 3: 458. 1885; 298. *Spennera sphaeranthera* Naud. Ann. Sci. Nat. sér. 3. 14: 142. 1850.

Small annual, the ascending-erect stems 1–2 dm. high, reddish pilose on the angles; leaves oblong-lanceolate, entire, both ends acute, 3-nerved, sparsely ciliate on the margins and pilose on the nerves beneath, mostly 3 cm. long, about 5 mm. wide; panicle

about 3 cm. wide, scarcely as high; petals retuse, 2–3 mm. long; anthers suborbicular.—F.M. Neg. 36189.

Cuzco: Near Cuzco, *Gay*, type.

16. MONOCHAETUM (DC.) Naud.

Reference: Gleason, Amer. Jour. Bot. 16: 502–522. 1929.

Shrubs with rather few cymose or solitary medium-sized 4-merous flowers and ovate or lanceolate leaves, the 3–7 nerves more or less strongly impressed above. Calyx tube oblong-campanulate or tubular, the lobes persisting in the Peruvian species. Anther connective not produced but the larger anthers with a porrect, often elongate and conspicuous appendage at base, the shorter, often sterile ones with slenderer and longer appendage. Ovary adherent below, 4-celled, pubescent at tip. Seeds arcuate or cochleate.—The related group *Pachyloma* DC. of the upper Amazon, to be expected, has a truncate calyx, the connective anteriorly biauriculate, the ovary glabrous; *P. coriaceum* DC., 390, has glabrous branches, the pedicels 1–3 mm.; *P. huberioides* (Naud.) Triana, 390, has branches slightly pilose at the nodes, the pedicels 1–2 cm. long.

Branchlets conspicuously spreading-hirsute.

Calyx somewhat glandular.....*M. subditivum.*

Calyx not at all glandular.....*M. dicranantherum.*

Branchlets glabrate or more or less appressed-setulose.

Calyx lobes 5–7 mm. long; petals nearly 10 mm. long.
M. lineatum.

Calyx lobes 4.5 mm. long; petals 6–7 mm. long...*M. subglabrum.*

Monochaetum dicranantherum (R. & P.) Naud. Ann. Sci. Nat. sér. 3. 4: 52. 1845; 393. *Rhexia dicrananthera* R. & P. Fl. Peruv. 3: 84. *pl. 320.* 1802.

Branches loosely hispid with spreading hairs; calyx not at all glandular, the pubescent lobes 3–3.5 mm. long; petals to 1 cm. long; larger anthers 4 mm. long, the tail recurving, that of the smaller filiform, erect.—The narrowly ovate leaves are 5-nerved, 2–3 cm. long, the pediceled flowers rather many in a terminal cyme. F.M. Neg. 16825.

Huánuco: Cuchero and Muña, *Ruiz & Pavón; 3929.* Caní near Mito, *3436.* Northeast of Huánuco, *2145.* Tomaiquichua, *2430.*

Monochaetum lineatum (D. Don) Naud. Ann. Sci. Nat. sér. 3. 4: 52. 1845; 399. *Arthrostemma lineatum* D. Don, Mem. Wern. Soc. 4: 299. 1823.

Branches very sparsely setulose, the few setae appressed; leaves oblong-lanceolate, 5-plinerved, 3–3.5 (5) cm. long, 10–12 mm. wide with a few scattered setae above, or these only in one line between the nerves, scarcely more pubescent on the nerves beneath; cymes axillary, few-flowered, open; calyx lobes 5–7 mm. long, nearly glabrous; larger anthers 6 mm. long, the smaller 3–4 mm. long.—Markgraf, in Herb. Madrid, has referred the Ruiz & Pavón specimen from Chinchao to *M. Hartwegianum* Naud., 394, a species collected at Guayaquil by Ruiz & Pavón, which, as to type, has spreading setose-villous branches, subglabrous calyx teeth 3 mm. long, and leaves glabrate except for some appressed setae. Cf. remark under *M. subditivum*. F.M. Neg. 26086.

Huánuco: Chinchao, *Ruiz & Pavón*.—San Martín: Moyobamba (*Mathews*).—Amazonas: Chachapoyas, *Mathews*. Without locality, *Née*. Ecuador.

Monochaetum subditivum Macbr. Field Mus. Bot. 4: 175. 1929.

An open shrub a meter or so high, similar to *M. dicranantherum* but the leaves 5-plinerved, 3–4 cm. long, the cymes 2–4-flowered and the calyx setae mostly gland-tipped; appendage of smaller anthers linear, little shorter than the anther.—Perhaps a var. of *M. lineatum*, as part of type of that species has glandular calyces.

Huánuco: Hacienda Villcabamba on the Río Chinchao, *5194*, type. Río Chinchao, *Ruiz & Pavón* (*M. lineatum* in part, in some herbaria).

Monochaetum subglabrum Gleason, Bull. Torrey Club 58: 220. 1931.

Stems very sparsely pilose, the trichomes 2–3 mm. apart; sepals triangular-lanceolate 4.5 mm. long, 1.6 mm. wide at base, sharply acute, glabrous except for the setulose tip; petals white or pink, 6–7 mm. long; small anthers with straight oblanceolate appendage, that of the larger arcuate, 4 mm. long, dilated toward the tip; style 4 mm. long.

Ayacucho: Ccarrapa, 1,500 meters (*Killip & Smith 22325*, type).—Junín: Carpapata, 2,700 meters (*Killip & Smith 24423*).

17. HUBERIA DC.

Glabrous, sometimes viscid shrubs with 3-nerved oblong or lanceolate leaves, and long-pediceled 4-merous cymose flowers. Calyx tube oblong, with a dilated lobed limb. Stamens nearly

equal, similar, the connective of the elongate anthers not produced, appendaged only posteriorly, the appendage directed downwards. Seeds broadly winged, the ovoid capsule included in the ventricose calyx, 4-angled, 4-celled.

Huberia peruviana Cogn. in Mart. Fl. Bras. 14, pt. 4: 10. *pl. 1.* 1886; 410.

Glabrous except for the viscous cymes; petioles nearly 1 cm. long; leaves crowded, rather rigid, lanceolate, rather closely serrulate above the middle, acuminate, 5–6 cm. long, about 2 cm. wide; calyx tube 6 mm. long, the linear teeth to 2 mm. long; petals golden yellow, very acute, 7–8 mm. long; capsule 8–9 mm. long; seeds 5–6 mm. long.—F.M. Neg. 25892.

San Martín: Tarapoto, *Spruce 4828.* Sambasbambe (*Mathews 1283*). Near Moyobamba, *Klug 3271.*

18. ADELOBOTRYS DC.

Scandent shrubs (rarely erect), often more or less herbaceous above and, usually at least, somewhat reddish-setose or furfuraceous, especially on the younger parts and on the leaves beneath, these oblong-elliptic to suborbicular. Flowers in panicled umbels or clusters, or the terminal inflorescence rarely reduced to 2–3 or few flowers. Calyx conical to campanulate, the limb dilated as a flange, usually merely undulate or barely 5-lobed, the outer teeth often merely tubercles or setae, sometimes subulate, rarely well-developed. Stamens equal in size, or unequal, or slightly dissimilar, the subulate anthers usually curved, the connective basally short-spurred and dorsally with an elongate appendage, often bifid or tailed, borne parallel to the anther. Filaments narrowly winged or flattened but usually filiform. Ovary 3–5-celled, the slender or filiform seeds tailed at least at one end.—As Gleason has shown, the stamens are often dimorphic; therefore the chief character upon which *Marshallfieldia* Macbr. (cf. *A. Boissieriana*) was based is of no value here; earlier descriptions of the genus were either not clear or inexact; the above character as regards the calyx and filaments, inflorescence also, seems to conform to the facts. The species listed are doubtfully all valid; two groups could be based on pubescence; this is mostly setulose in *M. Boissieriana, M. fuscescens, M. macrophylla, M. rotundifolia*—scurfy or appressed-strigose and scurfy or nearly lacking in remaining species.

Leaves oblong-lanceolate, 1.5–2 cm. wide . . . . . *A. subsessilis.*
Leaves ovate to subrotund, wider.

Leaves minutely, closely denticulate above the middle, below the entire margins revolute.....*A. Tessmannii.*

Leaves entire or obscurely crenulate-denticulate.

Calyx teeth 2.5–3 mm. long or longer.....*A. fuscescens.*

Calyx teeth minute or obsolete.

Petals about 15 mm. long; divisions of dorsal spur of anthers only 0.8 mm. long.....*A. macrantha.*

Petals usually much shorter; dorsal spur lobes about 2 mm. long or longer.

Petioles 5–7 mm. long, the oval leaves inordinately red-pubescent margined.....*A. praetexta.*

Petioles often longer (sometimes short); leaves in any case otherwise.

Leaves subrotund or only about one-third longer than broad; stamens obviously dimorphic.

Outer calyx teeth evident, marginal, the limb merely dilated.....*A. rotundifolia.*

Outer calyx teeth obsolete or the limb obscurely lobed. *A. Boissieriana.*

Leaves ovate or elliptic (always?), about twice longer than broad; calyx teeth below limb-margin, minute or obsolete; stamens nearly isomorphic.

Leaves more or less densely pilose beneath. *A. macrophylla.*

Leaves glabrate beneath or only lightly pubescent on the nerves.....*A. guianensis.*

Adelobotrys Boissieriana Cogn. in Mart. Fl. Bras. 14, pt. 4: 21. 1886; 420. *Marshallfieldia corallina* Macbr. Field Mus. Bot. 4: 176. 1929.

Branches scandent, densely long-reddish-villous, especially at the nodes; petioles to 12 (20) mm. long; leaves slightly obovate, more or less rounded at base, shortly acute or cusped, entire, 3-nerved with faint marginal nerves, the nerves and veins as the petioles and inflorescence, densely reddish-hispidulous, the leaves finally glabrate above, to about 11 cm. long, 8 cm. wide; panicle typically many-flowered, to 2 dm. long; pedicels 2–3(–5) mm. long; calyx 7 mm. long, the limb dilated, the obscure roundish scarious lobes 2 mm. high, the outer teeth about 0.3 mm. long or tuberculiform; filaments subfiliform but flattened, stamens very unequal, 7–8 mm. and

11 mm. long, nearly equaled by the long-attenuate anthers or the anther shorter, the capillary dorsal appendage 4–5 mm. long, deeply bifid; petals narrowly obovate, about 10 mm. long.—The type of *Marshallfieldia* was a young, undeveloped specimen; this would account for the reduced inflorescence of 2–3 flowers; the character of unequal stamens, upon which the genus was particularly segregated, is actually a character of other species of *Adelobotrys*, although Cogniaux described the stamens as equal, the filaments "filiform." In the type of *A. Boissieriana* the rather short, narrow and long filaments are 7 and 11 mm., their respective anthers 4–5 and 8–9 mm. —The species could be kept generically distinct on the basis of the aberrant calyx and would be as distinct a "genus" as several recognized traditionally. F.M. Neg. 29490.

Huánuco: Chinchao, *Pavón*, type.—Junín: La Merced, Hacienda Schunke, climbing a tree-trunk, *5642*, type, *Marshallfieldia*. Chanchamayo Valley, *Schunke 408*.

Adelobotrys fuscescens Triana, Trans. Linn. Soc. 28: 68. 1871; 420.

Moderately pilose, especially the leaves beneath and the calyces, the latter marking the species at once from other Peruvian forms by the long outer teeth, these as much as 3 or 4 mm. long; petioles 1 cm. long or longer; leaves coriaceous, ovate-oblong, 8 cm. long or longer, 5–8 cm. broad, entire, rather abruptly acuminate, 5-nerved; panicle ample, rather narrow; pedicels 4–8 mm. long; calyx tube 5–7 mm. long, subcylindrical, the strongly dilated limb obscurely lobed, 5–6 mm. broad; petals 6–7 mm. long.—F.M. Neg. 25850.

Loreto: Mouth of Santiago, *Tessmann 4506* (det. Markgr. as *A. macrophylla*). Brazil; Colombia.

Adelobotrys guianensis (DC.) Gleason, Brittonia 1: 141. 1932. *A. adscendens* Triana, Trans. Linn. Soc. 28: 67. *pl. 5*. 1871, not *Melastoma adscendens* Sw. Fl. Ind. Occ. 2: 772. 1800. *Davya guianensis* DC. Prodr. 3: 105. 1828. *Miconia scandens* R. & P. Fl. Peruv. 4: *pl. 395*. 1802. *Davya peruviana* DC. Prodr. 3: 105. 1828. *A. multiflora* Pilger, Verh. Bot. Ver. Brandenb. 47: 166. 1905.

Elongate branches, slender petioles and generally membranous leaves sparsely reddish-setulose, becoming glabrate or glabrous, or the leaves beneath more or less prominently setulose on the nerves, these 5, basal or sometimes partly originating above the base; leaves ovate-oblong, rounded at base, long-acuminate, entire, or rarely toward the tip remotely serrulate, the lower 1 dm. long, 6–8 cm.

wide or larger, the upper often much smaller; panicle much-branched, sometimes 2 dm. long or longer, the umbellate slender pedicels 4–7 mm. long; calyx tube 6–7 mm. long, 4–5 mm. broad at tip, the outer teeth 0.3–0.5 mm. long, barely projecting above the truncate calyx tube; filaments filiform but compressed, about 7 mm. long, the anthers nearly as long. Stamens somewhat dimorphic, but not distinctly so as in the true *adscendens* of Jamaica (Gleason).

Huánuco: Near Cuchero, *Dombey.*—San Martín: Moyobamba, 1,200 meters, *Weberbauer 4685;* 290, det. Cogn. Pongo de Cainarachi, *Klug 2603* (det. Gl. as *A. rotundifolia*). Without locality, *Ruiz & Pavón.*—Loreto: Mouth of Santiago, *Tessmann 4370; 4120* (det. Markgr. as *A. multiflora*); *Tessmann 406* (det. Markgr. as *A. rotundifolia*). Balsapuerto, *Klug 2948* (det. Gl.) Pampas de Ponasa, *Ule 6749,* type *A. multiflora.* Bolivia to Mexico and the West Indies.

Adelobotrys macrantha Gleason, Bull. Torrey Club 58: 220. 1931.

Younger branches, leaves beneath and panicles moderately brown-strigose; petioles stout, 3–5 cm. long, closely and completely pubescent; leaves elliptic, acute at each end, 5-nerved, soon glabrescent above; pedicels about 5 mm. long, the obconic-strigose calyx 9 mm. long, with broadly rounded sepals, the outer teeth conic-tuberculiform; petals pink, 15–19 mm. long; stamens nearly isomorphic, the filaments flat, 12 mm. long, the anthers nearly straight, the longer nearly 13.5 mm., the shorter 8.5 mm., the lobes of the dorsal spur only 0.8 mm. long; style slender, 16 mm. long, not tapering, the stigma truncate.—Shrub or small tree, the type noted as having rich pink petals and yellow anthers; *Killip & Smith 29616,* sterile, was a "subligneous vine." The largest leaves are 2.5 dm. long, 14 cm. wide.

Junín: Cahaupanas, on Río Pichis, 340 meters, *Killip & Smith 26745,* type.—Loreto: Río Itaya, *Killip & Smith 29496.* Soledad, *Killip & Smith 29616.* Mouth of Santiago, *Tessmann 4181* (det. Markgr. as *A. fuscescens*).

Adelobotrys macrophylla Pilger, Verh. Bot. Ver. Prov. Brandenb. 47: 165. 1905.

Younger branches and leaves beneath, especially on nerves and at margins, densely reddish-setose-villous; leaves elliptic, rounded or lightly cordate at base, gradually narrowed above, acute, membranous, becoming glabrescent above and as large as 18 cm. long,

8 cm. wide, 5-nerved; petioles stout, typically only 5–7 mm. long; flowers shortly pediceled, the calyx tube densely appressed, ashy-setose, 5 mm. long, the dilated limb not obviously lobed; petals white or roseate, broadly obovate, 8–9 mm. long; stamens equal, the filaments dilated, 7 mm. long, the anther slightly longer; style 3 mm. exserted.—F.M. Neg. 16849.

Loreto: Leticia, *Ule 6199*, type. La Victoria, *Williams 2914; 2915* (det. Gl.).

Adelobotrys praetexta Pilger, Verh. Bot. Ver. Prov. Brandenb. 47: 167. 1905.

Species striking by the broadly oval, abruptly caudate leaves which are soon glabrous or glabrate except for border of densely matted red hairs; petioles 7–15 mm. long; leaves typically about 6 cm. long, 3.5–4 cm. broad, 5-nerved, the veins obscure; fruiting pedicels 4 mm. long; calyces costate, sparsely setose, 6 mm. long, the limb not lobed, the outer teeth obsolete or setulose.—F.M. Neg. 16851.

Loreto: Pongo de Cainarachi, *Ule 6368*, type. Santa Ana, Upper Río Nanay, *Williams 1231* (det. Gl.).

Adelobotrys rotundifolia Triana, Trans. Linn. Soc. 28: 68. 1871; 420.

Subterete branchlets, petioles, leaves beneath and inflorescence moderately reddish-pilose; leaves typically suborbicular, apparently sometimes elliptic, about 9 cm. long, 7 cm. wide or smaller, often broader in proportion to width, shortly acuminate, rounded or emarginate at base, distinctly 5-nerved or the outer nerves only partial; pedicels 5–8 mm. long; calyx limb spreading, 5 mm. broad, inner lobes obvious, the outer teeth minute, triangular-subulate; petals 6–7 mm. long; stamens a little dimorphic, anthers 5 and 7 mm. long, the dorsal spur 3 mm. long, bifid for less than 1 mm.—Material referred here from Peru seems to be referable elsewhere. The species, however, has been collected rather near Peru in Brazil, *Krukoff 7277* (det. Gl.). Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 5.*

San Martín: San Roque, *Williams 7108*(?). Brazil.

Adelobotrys subsessilis Gleason, Bull. Torrey Club 58: 222. 1931.

Slender branches, leaves beneath and compact panicles densely strigose with malpighian trichomes; petioles merely 2 mm. long; leaves narrowly oblong-lanceolate, rounded at base, acute, entire,

3-nerved, with 2 submarginals, 5–7 cm. long, 1–2 cm. wide; calyx obconic, each broadly oblong sepal medially elevated into a spreading, stoutly conic outer tooth, 0.8 mm. long; petals pink, 9 mm. long; stamens nearly isomorphic, the anthers 6 and 7 mm. long; style slender, 9 mm. long, the stigma punctiform.—Type from a slender shrub 4 meters high; the leaves bear longitudinal strips of deep brown hairs and the panicles are racemiform.

Loreto: Iquitos, *Killip & Smith 27147*, type. Caballo-Cocha, *Williams 2170*.

Adelobotrys Tessmannii Markgr. Notizbl. Bot. Gart. Berlin 9: 1140. 1927.

Pale-green and glabrous except early, then slightly scurfy-pilose-puberulent on the petioles, leaf nerves beneath, younger stems and inflorescence; petioles sometimes 3 cm. long; leaves broadly ovate, rounded at base, acuminate, 5-nerved, to 15 cm. long, 9 cm. wide; pedicels 2–4 mm. long; calyx tube 3.5 mm. long, the dilated, merely undulate limb 4 mm. broad, the nearly marginal teeth minute but subulate and projected about 0.5 mm.; petals white, rose-tinted, 8 mm. long; stamens slightly dimorphic, the longer 7, the shorter 4 mm. long, the appendage 3 mm. long; style 3 mm. long; fruit globose, immature.

Loreto: Below Itaya, in flooded woods, *Tessmann 3572*, type. Colombia.

19. MERIANIA Swartz

Similar to *Axinaea* but dorsal anther appendage acute or knobbed or sometimes rudimentary, not at all inflated. Calyx lobes often with exterior teeth. Petals never emarginate. Filaments often linear or filiform. Ovary 3–6-celled, the style filiform. Capsule always included.—Calyx truncate and obscurely if at all lobed.

Leaves obviously serrulate nearly or quite to the base, ample.

Leaves cordate-based.

Pubescence sparse or nearly wanting..... *M. Raimondii.*

Pubescence abundant on leaves beneath..... *M. Radula.*

Leaves rounded or acute at base.

Calyx glabrous; outer teeth none..... *M. tetraquetra.*

Calyx scurfy; outer teeth developed but promptly caducous. *M. Weberbaueri.*

Leaves obscurely if at all serrulate or only above the middle and then, at least, small or medium in size.

Branches deeply sulcate-angled.....*M. nobilis.*
Branches terete or obtusely quadrate.
Leaves conspicuously hirsute-pilose.....*M. intonsa.*
Leaves glabrous or scurfy beneath.
Flowers solitary or rarely ternate.
Leaves ovate or elliptic; calyx tube grooved.*M. prunifolia.*
Leaves oblong-lanceolate; calyx tube smooth.*M. longifolia.*
Flowers paniculate, sometimes few.
Leaves oblong-lanceolate, serrulate.....*M. oblongifolia.*
Leaves ovate-elliptic, entire.
Calyx densely reddish-puberulent.....*M. urceolata.*
Calyx glabrous.
Flowers 5-merous.....*M. rugosa.*
Flowers 6-merous.....*M. hexamera.*

Meriania hexamera Sprague, Trans. Bot. Soc. Edinb. 22: 431. 1905.

Similar to *M. rugosa;* petioles 1.5–2.5 cm. long; leaves somewhat smaller; calyx merely undulate, outer lobes obsolete; petals 6, obovate.—The Peruvian collection is nearly glabrous; there are essentially 3 principal nerves a little above the base and a very faint marginal pair. The material is incomplete as seen by me but appears, from photograph, to be Sprague's species.

Amazonas: Rare tree, trail between Chachapoyas and Moyobamba, *Williams 7598.* Colombia.

Meriania intonsa Gleason, Bull. Torrey Club 58: 223. 1931.

Scandent, the hirsute nodes 4–8 cm. long; petioles stout, 6–13 mm. long; leaves elliptic, subcordate, abruptly acuminate, 5-nerved, densely long-pilose above, hirsute on the veins, pilose on the face beneath, membranous, to 8.5 cm. long, 5.5 cm. wide; inflorescence terminal, few-flowered, sessile with sessile cordate-ovate bracts; flowers subsessile, the calyx narrowly obconic, 4 mm. long, the limb undulate, the hirsute subulate teeth 3.5 mm. long and terminating in a longer bristle; petals about 5 mm. long, broadly rounded; connective bispurred at base, the basal spur conic, the dorsal elongate; ovary 5-celled.—The yellowish calyx-bristles are striking, the petals lilac or white.

Loreto: Mishuyacu, *Killip & Smith 29969,* type; *Klug 1334; 2541; 90.* Colombia.

Meriania longifolia (Naud.) Cogn. Melast. 426. 1891. *Chastenaea longifolia* Naud. Ann. Sci. Nat. sér. 3. 4: 55. 1845.

Nearly glabrous; petioles 4–8 mm. long, minutely pilose above; leaves lanceolate, mostly 6 cm. long, 1.5–2 cm. wide, glabrous, long-acuminate, minutely serrulate toward the tips, firm; solitary flowers axillary and terminal on long slender peduncles but with two leaf-like bracts below the calyx, this with rounded tube 7–8 mm. long, broadly triangular lobes 3 mm. long, minute outer teeth; petals to 2 cm. long; appendages rudimentary.—The Peruvian plant is the var. **Spruceana** (Cogn.) Macbr., comb. nov. (*M. Spruceana* Cogn. Melast. 426. 1891) distinguished from the typical form by shorter petioles, leaves, and flowers. F.M. Neg. 16876.

San Martín: In the mountains of Campana, Tarapoto, *Spruce 4204*, type. San Roque, *Williams 7010* (det. Gl.). Near Moyobamba, *Klug 3642*. Also in Colombia and Venezuela. "Cruz chillca."

Meriania nobilis Triana, Trans. Linn. Soc. 28: 66. 1871; 436.

Branches and leaves lustrous, glabrous, the former deeply sulcate-angled or somewhat winged and membranously stipulate at the enlarged nodes; petioles 4–8 cm. long; leaves cordate-ovate, dilated-flanged at base, apically subrounded or apiculate, stoutly 5-nerved and with another pair of faint marginal nerves, 2 dm. long, 1.5 dm. wide or larger; pedicels to about 3 cm. long; calyx tube campanulate, the cupulate limb obscurely 5-lobed, the rather prominent outer teeth confluent with the inner; connective of the larger anthers long-clawed, the claw subulate, ascending, the appendage of the smaller anthers confluent with the connective.—It seems possible that the specimen cited here was mislabeled. F.M. Neg. 26054.

Peru(?): Without locality, *Ruiz & Pavón*. Colombia. "Panda."

Meriania oblongifolia Cogn. Melast. 429. 1891.

Glabrous, the branchlets slender and leafy only toward the tips; leaves oblong-elliptic, 8 cm. long, 2.5 cm. wide, thin, decurrent on the slender petiole, this about 2 cm. long, finely serrulate toward the acutish tip, 3-nerved or slightly plinerved; panicle loose, nodding, the pedicels 5 mm. long or longer; calyx obscurely lobed, the tubercle-like teeth obvious; petals in herbarium pale yellow; anthers shortly and thickly beaked at base.—The type may have been found in Ecuador. F.M. Neg. 36200.

Peru(?): Without locality, *Grisar*, type.

Meriania prunifolia D. Don, Mem. Wern. Soc. 4: 323. 1823; 438.

Branchlets slender, furfuraceous; petioles nearly filiform, 4–7 mm. long; leaves ovate, bluntly acute, to 4 or 5 cm. long, 2.5 cm. wide, membranous but firm, green and glabrous above, lighter beneath, where a little scurfy on the 3–5 nerves; flowers terminal or axillary, solitary, subsessile; calyx tube scurfy, campanulate, 4 mm. long, the broadly rounded lobes 2 mm. long, the spreading teeth to 4 mm. long; appendages elongate.—The fruiting calyx is strikingly grooved, the outer calyx teeth about a third as long. The K. & S. specimen, in fruit with glabrous calyx, elliptic leaves 14 by 5 cm. may not belong here. F.M. Neg. 26055.

Peru(?): Without locality, *Ruiz & Pavón*, type.—Junín: tree, 8 meters, Santa Rosa, Pichis Trail, *Killip & Smith 26184*(?).

Meriania Radula (Benth.) Triana, Trans. Linn. Soc. 28: 66. 1871; 431. *Axinaea Radula* Benth. Pl. Hartw. 130. 1844. *A. purpurea* R. & P. Syst. 1: 122. 1798, not *M. purpurea* Sw. *Miconia incarum* Macbr. Trop. Woods 17: 12. 1929.

Stout tree-shrub, the thick branchlets obtusely quadrate; petioles 2–3 cm. long; leaves cordate-ovate, to 2 dm. long, 1.5 dm. wide or larger, crenulate-denticulate, dark green and bullate-asperous above, paler and crisply tomentulose beneath, 7–9-nerved; calyx tube somewhat furfuraceous, subhemispheric, to nearly 1 cm. long, the glabrate limb truncate-dilated; petals about 1.5 cm. long; appendages rudimentary. Sometimes a tree 17 meters high.—F.M. Neg. 16873. Illustrated, R. & P. Fl. Peruv. 4: *pl. 410.*

Huánuco: Muña, *Ruiz & Pavón*, type. Mito, *1867*, type, *M. incarum; 3547.*—Libertad: Prov. Pataz, *Weberbauer 7032.* Ecuador. "Mogo-mogo."

Meriania Raimondii Markgr. Notizbl. Bot. Gart. Berlin 13: 461. 1937.

Comparable to *M. Radula;* petioles 3–5 cm. long; leaves sometimes somewhat plinerved, chartaceous, cordate, shortly acuminate, broadly serrate, 12–15 cm. long, 8–9 cm. wide, obtusely bullate, glabrous except the sparsely furfuraceous nerves beneath; pedicels 4–6 mm. long; calyx glabrous with sinuate triangular lobes 1 mm. high, 2.5 mm. broad; petals 10 mm. long and broad, glabrous; filaments and anthers 7 mm. long, the connective with acute spur 2 mm. long; fruit 7 mm. thick, globose, angled.

Cajamarca: Cutervo, in flower and fruit in April (*Raimondi*, type).—San Martín: Moyobamba, *Williams 7579*.

Meriania rugosa Markgr. Notizbl. Bot. Gart. Berlin 13: 460. 1937.

A tall shrub, glabrous (or essentially) with obtusely quadrangular glabrate branchlets, quadrately rugose, subchartaceous, lanceolate-elliptic leaves that are oblique at base, minutely undulate-margined, 5-plinerved, 15–17 cm. long, nearly half as wide; petioles to 4 cm. long; panicles lax, terminal, to 2.5 dm. long, the slender pedicels 5–10 mm. long; calyx tube 5 mm. high, 6 mm. broad, the 5 obtuse lobes 2 mm. long, 4 mm. broad, tubercled posteriorly; petals orbicular, 1 cm. broad; filaments 7 mm. long, 2 mm. broad, the acuminate anthers 10 mm. long; connective spur 2 mm. long, unappendaged; style 12 mm. long; ovary costate.—Apparently very nearly *M. hexamera*.

Amazonas: Chachapoyas, Valle de Huayabamba (*Raimondi*, type). Between Cochamal and Santa Rosa (*Raimondi*).

Meriania tetraquetra Triana, Trans. Linn. Soc. 28: 66. 1871; 431.

Nearly the same as *M. Radula* and perhaps not specifically separable; branches acutely quadrate; petioles longer and leaves larger, membranous, more remotely denticulate and merely scurfy puberulent on the nerves beneath.—F.M. Neg. 26058.

Amazonas: Chachapoyas, *Mathews*, type.—Libertad: Prov. Pataz, 2,000 meters, *Weberbauer 7048* (det. Markgr.).

Meriania urceolata Triana, Trans. Linn. Soc. 28: 67. 1871; 435.

Branches and petioles terete or nearly, the latter 2.5 cm. long; leaves broadly ovate, minutely auriculate at base, to about 15 cm. long and half as wide, 5-plinerved, glabrous above, minutely brown-stellate beneath, the surface nearly concealed; panicles terminal, erect, many-flowered; calyx about 1 cm. long, reddish-scurfy, the exactly truncate limb minutely 5-tubercled above the margin; appendages elongate.—Marked by the red-puberulent tubular calyx. A tree to 7 meters (Triana). F.M. Neg. 16877.

San Martín: Tarapoto, *Spruce 4439*, type. Moyobamba, 800 meters, *Weberbauer 4570; 4541;* 290; *Klug 3451*. Brazil; British Guiana.

Meriania Weberbaueri Macbr. Field Mus. Bot. 4: 176. 1929.

Branchlets somewhat enlarged at the nodes, obscurely quadrate, scurfy, finally glabrous; leaves broadly elliptic-ovate, slightly attenuate at base, repandly serrulate toward the obtuse tip, the larger about 2 dm. long and half as wide, firm, glabrous above, minutely and densely pubescent beneath, with stellate and pilose hairs intermixed, 7-plinerved; cymes few-flowered; calyx lobes triangular, equaling or longer than the tube, this campanulate, 6 mm. long, the outer teeth scarcely 3 mm. long, the limb not at all dilated; petals rose-colored, about 2 cm. long; connective strongly enlarged at base, produced into a short, minutely bilobed appendage.—Said to be a member of the section *Umbellatae* Cogn., 428, but simulates *M. tetraquetra* closely.

Junín: Valley of the Río Masamerich, branch of the Río Pangao, *Weberbauer 6659*, type.

20. AXINAEA R. & P.

Chastenaea DC. Prodr. 3: 102. 1828.

Reference: Donald S. Eves, Bull. Torrey Club 63: 211-226. 1936.

Glabrous or pubescent shrubs or trees with rather showy, 4–5-merous flowers borne in broad lateral and terminal panicles. Branches sometimes conspicuously enlarged at the nodes or stipule-scarred, the leaves sometimes blunt, and in many species with the lobes or auricles at the base drawn together on the upper side into a small tubercle, this structure more or less developed. Calyx limb dilated, truncate or very shortly and obscurely lobed. Stamens 10, sometimes 8, equal or nearly, glabrous, the anther connective inflated or fleshy, dorsally appendiculate. Ovary free, 4–5-celled. Seeds many, oblong-pyramidal.—*A. purpurea* R. & P. Syst. 1: 122. 1798, not mentioned or not identified by Eves, is *Meriania Radula*.

Leaves basally tubercled by the confluence of the dilated petiole-tip with adjacent leaf-margin, the resultant thickening sometimes wart-like, sometimes obscure.

Leaves with a more or less expanded and recurved auricle on petiole-tip ..... *A. grandifolia.*

Leaves not so auricled, if at all.

Leaves villous beneath, with plumose trichomes . . . *A. tomentosa.*

Leaves glabrous or more or less scurfy beneath, the trichomes not distinctly if at all plumose.

Leaves broadly ovate, about twice as long as broad.
Leaves tomentose beneath ..... *A. glandulosa.*
Leaves glabrate beneath ..... *A. tetragona.*
Leaves lance-ovate, about thrice as long as broad.
Branchlets obscurely angled; petioles 1–1.5 cm. long. *A. nitida.*
Branchlets (the youngest) angled; petioles 2–3 cm. long.
Leaf auricles reflexed, the leaf base thus appearing acute from above ..... *A. Pennellii.*
Leaf auricles flat or curved, the leaf base definitely cordulate ..... *A. Weberbaueri.*
Leaves plane at base, but in *A. lanceolata* auricled.
Leaves sessile, or nearly, and cordulate ..... *A. sessilifolia.*
Leaves petioled, long-petioled if cordate.
Leaves long-petioled, definitely cordate; petals 4 (5?).
Nodes with flange-like annulus ..... *A. tetragona.*
Nodes merely enlarged ..... *A. crassinoda.*
Leaves short-petioled, obscurely if at all cordate; petals 5.
Leaves not entire.
Stipules persisting ..... *A. dependens.*
Stipules deciduous.
Leaves with reflexed basal auricles ..... *A. lanceolata.*
Leaves without auricles, the leaf base rarely revolute. *A. Merianiae.*
Leaves entire ..... *A. pauciflora.*

Axinaea crassinoda Triana, Trans. Linn. Soc. 28: 69. 1871; 214.

A sprawling or straggling shrub or small tree, well marked by the strikingly enlarged nodes of the somewhat tetragonous branches, the prominent stipule scars and, especially, by the 4-merous flowers, in which character the species is unique; petioles stout, 4–7 cm. long, densely scurfy-hirsute as the leaves beneath; leaves broadly ovate, 13–19 cm. long, 12–16 cm. wide, cordate basally, rounded and obtuse apically, conspicuously crenate-dentate, subcoriaceous, 7–9-nerved; panicles pendulous, about 1.5 dm. long, the branches spreading, the pedicels and calyces scurfy, the former 4–10 mm. long; calyx limb 4-lobed to truncate; petals pink, retuse, 8–10 mm. long; stamens 8, the conic acuminate connective 4 mm. long; style slightly curved, 9–12 mm. long.—F.M. Neg. 25854.

Amazonas: Chachapoyas, *Mathews 3213*, type. Playapampa, *4873*.

Axinaea dependens R. & P. Fl. Peruv. 4. *pl. 411*. 1802; 218. *Meriania dependens* (R. & P.) Naud. Ann. Sci. Nat. sér. 3. 18: 124, 129. 1852.

Branches obscurely tetragonal, little if at all enlarged at the nodes, early finely scurfy, the stipules persistent, semi-circular; petioles to 4.5 cm. long, scurfy-puberulent, as the 5-nerved or shortly plinerved leaves beneath, especially on the nerves and veins; leaf-blades ovate- or oblong-elliptic, bluntly acute, acute to rounded at the base, 11–16 cm. long, 3–5 cm. broad, submembranous; panicles pendulous, to 2.5 dm. long, the puberulent pedicels 10–12 mm. long; calyx scurfy-puberulent, 5–7 mm. wide, the limb obscurely 5-lobed; petals obtuse, 10–12 mm. long; filaments very flat, equaled by the narrowly conic, long-acuminate connectives, these 5 mm. long; style attenuate, 12–18 mm. long.—F.M. Negs. 16897; 16899 (as *A. glandulosa*).

Huánuco: Chinchao, *Ruiz & Pavón*, type.—Junín: Vitoc, *Ruiz & Pavón*.

Axinaea glandulosa R. & P. Fl. Peruv. 4: *pl. 412*. 1802; 214. *Chastenaea glandulosa* (R. & P.) Naud. Ann. Sci. Nat. sér. 3. 18: 123, 124. 1852.

Similar to *A. dependens*, but the stipule scars not prominent, the leaves 5–7-nerved, auriculate and tubercled at base, the auricles reflexed, densely scurfy-tomentose beneath, coriaceous, 5–7 cm. wide; panicles erect, the peduncles stout, the thick, scurfy pedicels 5–8 mm. long; calyx glabrous, rugose, 7 mm. wide; petals apiculate, 13 mm. long; connective broadly ovate, flattened, obtuse or acute, shorter than the curved filaments, these 4–5 mm. long; style nearly filiform, 15 mm. long.—The flowers are white, the petals apparently sometimes 17 mm. long. Eves' application of this name and *A. dependens* is followed, although in some herbaria at least the Ruiz & Pavón collections are not so named.

Huánuco: Chinchao, *Ruiz & Pavón*, type. Pampayacu, *Kanehira 11*.

Axinaea grandifolia (Naud.) Triana, Trans. Linn. Soc. 28: 69. 1871; 222. *Chastenaea grandifolia* Naud. Ann. Sci. Nat. sér. 3. 18: 122. 1852.

Upper branches obtusely tetragonal, pulverulent near the tip, as also the slender petioles, these 3–4 cm. long and transversely

tubercled apically; leaves narrowly ovate, 7–16 cm. long, often 6–7 cm. wide, rounded but apiculate apically, shortly decurrent basally and the decurrent portion recurved or expanded and crisp, sinuate-dentate, 5–7-nerved, glabrous above, sometimes somewhat scurfy beneath, coriaceous; panicles erect, many-flowered, the pulverulent pedicels 8–12 mm. long; hypanthium broadly hemispheric, 7–8 mm. wide, glabrous or nearly, the limb subentire; petals retuse to apiculate, 10–12 mm. long, purple or white; anther connective ovoid to rotund, apiculate to blunt, 2 mm. long; style slightly arcuate, 7–8 mm. long.—To this Eves refers *Sawada 68* (here placed in *A. nitida*) which, though it has smaller (7×3 cm.), less pubescent leaves, lacks the recurved decurrent auricles. F.M. Neg. 16900.

Peru: (fide Eves). Colombia; Venezuela.

Axinaea lanceolata R. & P. Syst. 1: 122. 1798; Fl. Peruv. 4: *pl. 409*. 1802; 216. *Chastenaea lanceolata* (R. & P.) Naud. Ann. Sci. Nat. sér. 3. 18: 123. 1852.

Glabrous or nearly so, the upper branches acutely tetragonous, the slender petioles 5–6 cm. long, without the foliar tubercle, the leaves ovate-lanceolate, 1–2 dm. long, 3–10 cm. wide, bluntly acuminate, at base auriculate, the auricles conspicuously folded under, remotely and coarsely serrate, shortly 5-plinerved, coriaceous; panicles pendulous, few-flowered; pedicels sometimes scurfy, 5–10 mm. long; calyx broadly campanulate, granular-puberulent or glabrous, 6–11 mm. wide, the limb subtruncate; petals rounded or retuse, pink to white, 10–18 mm. long; anther sacs subulate, 5–8 mm. long, the ovoid connective obtuse or acute; style filiform, 5 mm. long.—In the type the leaves are scurfy-puberulent and yellowish green beneath, becoming nearly glabrous; the pedicels are stout. Eves refers this negative to *A. glandulosa;* it seems to match cotype material from Madrid. F.M. Neg. 16901.

Huánuco: Muña and Panao, *Ruiz & Pavón*, type. San Dillani, *Pearce*. Bolivia.

Axinaea Merianiae (DC.) Triana, Trans. Linn. Soc. 28: 69. 1871; 224. *Chastenaea Merianiae* DC. Prodr. 3: 102. 1828.

Glabrous shrub to 5 meters tall, with white or rose-colored flowers, the filaments white, the anthers yellow, the connectives dark red-violet; petioles slender, 1.5–2 cm. long, without foliar tubercle; leaves elliptic, 4–6 cm. long, 2.5–3 cm. wide, acute or obtuse, basally revolute-decurrent and this portion sometimes notably expanded and reflexed, sinuate-serrate, 3–5-plinerved, subcoriaceous; panicle some-

what nodding, few-flowered; pedicel 10 mm. long; calyx shallowly campanulate or saucer-shaped, 7–10 mm. wide, the dilated, often reflexed limb truncate or slightly 5-sinuate; petals retuse, white to rose-colored, 12–15 mm. long; anther sacs 4 mm. long, the large blunt connectives nearly or quite as long; style attenuate, 9–15 mm. long.—The Peruvian specimen was referred by Markgraf to *A. affinis* (Naud.) Cogn. of Ecuador and Colombia, with 5-nerved leaves, a broadly hemispheric calyx and connectives acuminate at one end (according to Eves).

A. sclerophylla Triana, 216, of Ecuador, similar, has the leaves pubescent in the manner of *A. tomentosa; A. macrophylla* (Naud.) Triana, 223, found as near as Ecuador, differs in its 7-nerved leaves; the submarginal nerves are the sixth and seventh, in *A. affinis*, the fourth and fifth (Eves).

Piura: Ayavaca, *Weberbauer 6371*.—Libertad: Prov. Otuzco, *Weberbauer 6997*.

Axinaea nitida Cogn. Bot. Jahrb. 42: 138. 1908; 220.

Glabrous except for a slight scurfy puberulence on the younger petioles, peduncles and leaves beneath, the obscurely tetragonous branches becoming lustrous as the coriaceous leaves above, these narrowly ovate, 5–9 cm. long, 3.5–5 cm. broad, rounded at base and tubercled, shortly acuminate, undulate-denticulate, 5-nerved; panicles short, densely many-flowered, about 6 cm. long; pedicels 3–8 mm. long; calyx broadly hemispheric, 6–7 mm. broad, the limb truncate or undulately lobed; petals reddish, rounded to very slightly retuse, 10–14 mm. long; anthers 5 mm. long, the ellipsoid connectives blunt, the nearly filiform style 11–13 mm. long.—Distinguished from *A. grandifolia* (which compare) by the lustrous branchlets and upper leaf surfaces and by its never decurrent leaf bases. The Sawada shrub may be a new species; it is more tardily glabrate and less lustrous. F.M. Neg. 16904.

Amazonas: Molinopampa, east of Chachapoyas, 2,000 meters, *Weberbauer 4355*, type; (*Mathews 1287*).—Huánuco: Pan de Azucar, *Sawada 68*(?).

Axinaea pauciflora Cogn. Melast. 448. 1891; 219.

Branches rather slender, the upper obtusely tetragonous and with the petioles, cymes, calyces, and leaves beneath lightly scurfy-puberulent; petioles stout, 1 cm. long; leaves ovate, subacute at base, nearly obtuse, 6–10 cm. long, 4–5 cm. broad, 5-plinerved, entire except for a few minute calluses, rigid coriaceous, slightly yellowish-

scurfy beneath, the nerves extremely pronounced; cymes terminal, the 5 pedicels 1 cm. long in fruit, hispidulous-scurfy, the peduncle itself 15 mm. long; anthers linear, 5 mm. long, the anther sac narrowly ovoid, acute; style 1.5 cm. long.—Possibly collected in Ecuador. *A. Drakei* Cogn., 218, of Ecuador, similar, has much longer glabrous leaves; *A. lepidota* (Benth.) Triana, 225, of the same country, is strongly marked by a pale arachnoid pubescence. F.M. Neg. 36210.

Peru: (?), *Grisar*, type.

Axinaea Pennellii Gleason, Bull. Torrey Club 54: 28. 1927; 217.

Branches subterete, obscurely 4-sided and rusty-scurfy toward the tip, somewhat enlarged at the nodes; petioles slender, 1.5–2 cm. long, with a more or less prominent but minute tubercle at the junction with the reflexed and overlapping leaf-auricles; leaves long-ovate, 10–16 cm. long, 3.5–6 cm. wide, blunt-acuminate, conspicuously sinuate-serrate, 5–7-nerved, glabrous above, thinly yellowish-scurfy beneath, the auricles small; panicles erect, about 10-flowered; pedicels thinly scurfy, 5–10 mm. long; calyx broadly hemispheric, often glabrous, 10 mm. wide, the limb truncate; petals purple, retuse, 16 mm. long; filaments 7–10 mm. long; anther connective ovoid, blunt, 5–6 mm. long; style 14 mm. long.

Cuzco: Forest and cliff above Río Pillahuata, *Pennell 14003*, type.

Axinaea sessilifolia Triana, Trans. Linn. Soc. 28: 68. 1871; 213.

In general similar to *A. crassinoda* but the leaves sessile or nearly, their cordate bases clasping the thick quadrate branches, conspicuously plinerved, to at least 1.5 dm. long, 7 cm. wide, green in color, but often lightly scurfy on the nerves beneath or glabrous; pedicels 6–10 mm. long, glabrous; petals rounded or barely retuse, 13–15 mm. long; connectives with a conspicuous dorsal lobe, apiculate, 4 mm. long; style abruptly curved near the tip, 8–9 mm. long.—A tree about 12 meters tall, the petals blood-red, the anthers yellow (Eves). F.M. Neg. 32326.

Junín: Vitoc, *Ruiz & Pavón* (det. Markgr.). Ecuador.

Axinaea tetragona Cogn. Bot. Jahrb. 42: 137. 1908.

Shrub 2 meters high, with stout, acutely 4-angled, or nearly winged, glabrous branches, the nodes annulately enlarged, the annulus thick, wing-like; petioles slender, lightly scurfy, 3–6 cm. long; leaves subcoriaceous, ovate-cordate, acutish, 9-nerved, undulate-

denticulate, 7–12 cm. long, 5–9 cm. wide, glabrous and somewhat bullate above, sparsely or scarcely scurfy-puberulent and reticulate-veined beneath; panicles 2.5 dm. long with few short, suberect branches; pedicels 6–10 mm. long; calyx glabrous or sparsely scurfy, 7 mm. broad, obscurely lobed; petals obovate, broadly rounded, eciliate, 10–11 mm. long; anthers linear, 6 mm. long; style filiform, 11–12 mm. long.—Affine *A. crassinoda* Triana. Eves suggested that this might be a species of *Meriania*, but it seems clearly to belong here; the leaves are obscurely tubercled at base. F.M. Neg. 16905.

Amazonas: East of Chachapoyas, near Tambo Bagazan, 2,700 meters, *Weberbauer 4430*, type.

Axinaea tomentosa Cogn. Melast. 451. 1891; 215.

Branches conspicuously tetragonous, only slightly enlarged nodally, or stipule-scarred, furfuraceous as also the stout petioles, these 2–3.5 cm. long, with an apical tubercle, but this sometimes obscure; leaves broadly elliptic, 12–15 cm. long, 7.5–8 cm. wide, apiculate to obtusely acuminate, acute and slightly revolute at base, finely and remotely denticulate, 5–7-nerved or shortly plinerved, glabrous above, densely rusty-tomentose-villous beneath, with crinkly plumose trichomes; panicles erect, compact, many-flowered; pedicels densely scurfy, puberulent, thick, 2–5 mm. long; calyx broadly campanulate, 7–8 mm. wide, the limb truncate to shallowly 5-lobed; petals obtuse to subretuse, 12–15 mm. long; filaments and anther sacs 6–8 mm. long, the ovoid connective with 2 large, somewhat flattened lateral lobes; style slender, 17 mm. long.—Perhaps a var. of *A. glandulosa*, more obviously pubescent, the trichomes longer.

Amazonas: Chachapoyas, *Mathews*, type. Prov. Bongara, *Weberbauer 7150* (det. Eves).

Axinaea Weberbaueri Cogn. Bot. Jahrb. 50: Beibl. 111: 32. 1913; 215.

Nearly *A. glandulosa*, but the upper branches acutely 4-sided, the petioles slender, the basal leaf auricles small and somewhat recurved but not definitely reflexed; leaves very shortly and rather densely stellate-tomentose beneath; pedicels 2–6 mm. long; petals violet or purple, 10–16 mm. long, retuse; anther sacs flattened, with 2 lateral wings extending downward from the connective; style slender, 6–15 mm. long.

Ayacucho: Prov. of Huanta, 2,700 meters, *Weberbauer 5648*, type.

21. GRAFFENRIEDA DC.

Glabrous, pulverulent, or rarely pubescent shrubs or trees, usually with large leaves and small 4–5-merous flowers, these often borne in ample terminal panicles. Calyx tube oblong-campanulate, the limb regularly lobed or the calyx irregularly splitting at anthesis. Stamens equal or subequal, the anthers subulate, the connective basally prolonged into a short sharp spur, erect or nearly erect by the incurving of the anther.—*Miconia flaviflora* Gleason and *M. firma* Macbr. might be sought here, but both species lack the anther spur. Two keys are appended.

Flowers 5-merous.

Calyx splitting irregularly.

Leaves merely 3-nerved ..... *G. limbata.*

Leaves 5-nerved or 5-plinerved.

Leaves stellate-hirsute beneath ..... *G. acida.*

Leaves nearly glabrous ..... *G. foliosa.*

Calyx regularly lobed.

Pedicels 1–4 mm. long; petals and calyx lobes rounded. *G. Candelabrum.*

Pedicels obsolete; petals and calyx lobes acute.

Leaves tomentose beneath ..... *G. stenopetala.*

Leaves hispid beneath ..... *G. cinna.*

Flowers 4-merous.

Principal leaf nerves 5 or the leaves plinerved (cf. *G. trichanthera*).

Leaves oblong-lanceolate, acuminate, often plinerved. *G. Moritziana.*

Leaves ovate, acute or shortly acuminate, shortly if at all plinerved.

Branches and petioles stout; ovary 4-celled .... *G. emarginata.*

Branches and petioles slender; ovary 3-celled .. *G. intermedia.*

Principal leaf nerves 3, basal.

Leaves ample, 8 cm. wide or wider.

Calyx tube about 3 mm. long, the lobes a third as long. *G. floribunda.*

Calyx tube about 2 mm. long, the lobes half as long. *G. miconioides.*

Leaves ovate-lanceolate, 5 cm. wide or narrower .. *G. trichanthera.*

Vegetative key

Principal leaf nerves 3 (midrib and 1 pair, this at or near margin).
  Calyx tube 4–6 mm. long; inflorescence narrow.
    Inflorescence cinereous; calyx 5–6 mm. long.....*G. limbata.*
    Inflorescence glabrate; calyx about 4 mm. long..*G. trichanthera.*
  Calyx tube 2–3 mm. long; inflorescence ample.
    Outer pair of nerves marginal.....*G. floribunda.*
    Outer pair of nerves submarginal.....*G. miconioides.*
Principal leaf nerves 5 (1 pair about medial, another submarginal, often fainter) or the leaves plinerved.
  Leaves oblong-lanceolate.
    Leaves coriaceous, shortly 3-plinerved, acute....*G. trichanthera.*
    Leaves membranous, often shortly 5-plinerved, acuminate.
      G. Moritziana.
  Leaves broader, ovate to elliptic or if oblongish only twice longer than broad.
    Flowers solitary on divaricate branchlets.....*G. Candelabrum.*
    Flowers if terminal crowded on short ascending branchlets.
      Leaves oblongish, 3–4 (4.5) cm. wide.
        Shrub nearly glabrous.....*G. foliosa.*
        Shrub markedly pubescent.....*G. cinna.*
      Leaves broadly ovate to elliptic.
        Leaves acute or acuminate.
          Pubescence stellate-hirsute.....*G. acida.*
          Pubescence compact, scurfy or scaly, often nearly lacking.
            Leaves glabrate.....*G. intermedia.*
            Leaves rusty scaly-tomentose.....*G. stenopetala.*
        Leaves rounded at tip and base.....*G. emarginata.*

Graffenrieda acida Markgr. Notizbl. Bot. Gart. Berlin 13: 462. 1937.

Tree with greenish astringent-acidulous bark, obtusely tetragonous branchlets and short, more or less sparse, stellate-hirsute pubescence extending to the calyces, the leaves only above soon glabrate; petioles to 3 cm. long; leaves elliptic, acute at both ends, 12–18 cm. long, 5–8 cm. wide, 5-plinerved, minutely dentate above the entire base; flowers 5-merous, cymose-corymbose, the pedicels 1–2 mm. long; calyx oblong, 4 mm. long, after anthesis the conical limb

irregularly lacerate; petals 5, fleshy, obovate, 10 mm. long; filaments rose-colored, 6 mm. long, nearly equaled by the dark-violet anthers; connective produced 1 mm. and shortly spurred posteriorly, red; style 1.5 cm. long, ovary glabrous, 5-celled.—Near *G. foliosa.*

Cajamarca: Tambillo, Cutervo (*Raimondi*, 5 sheets, type). Colombia.

Graffenrieda Candelabrum Macbr., spec. nov.

Liana; caulibus petiolisque teretibus minute parceque cum pilis paullo stellulatis vel plumosis hispidulis mox glabratis; petiolis 1 cm. longis; foliis ovatis, basi rotundatis vel subacutis, acute acuminatis, circa 14 cm. longis, 6 cm. latis, 3-nerviis, nervis lateralibus ad marginem proximis, nervis cum nervulis transversalibus et venulis reticulatis subtus praecipue prominentibus, utrinque glabris, nitidulis, chartaceo-coriaceis; paniculis amplis, candelabriformis, ramulis gracilibus; floribus solitariis, ut videtur lateralibus terminalibusque, sessilibus, 5-meris; calycis tubo oblongo-tubuloso fere 3 mm. longo, glabro, minute setoso-denticulato; petalis distincte acutis circa 3 mm. longis; antheris subulatis, connectivo basi calcarato; ovario villoso. —By Gleason determined as *G. patens* Triana, 441, which Brazilian species, similar in foliage, has the flowers crowded at the tips of the panicle-branches.

Loreto: Mishuyacu near Iquitos, *Klug 413*, type.

Graffenrieda cinna Macbr., spec. nov.

Arbuscula 2 m. alta; ramis petiolis paniculisque dense plumoso-furfuraceis et puberulentis; petiolis 1–2 cm. longis; foliis ovato- vel oblongo-ellipticis, basi acutis, apice conspicue et anguste caudatis, 5–9 cm. longis, 3–4.5 cm. latis, supra glabris, nitidulis, subtus laxe nervis furfuraceis exceptis hispidis, breviter 5-plinervii; capitulis florum mediocriter confertis; floribus sessilibus 5-meris; calyce subobconico, 2.5 mm. longo, minute furfuraceo, lobis ovatis acutis; petalis lineari-lanceolatis, acuminatis, 3 mm. longis; antheris subulatis, basi breviter calcaratis; ovario costato, furfuraceo, libero.—Apparently referable to this genus but remarkable in the variety of character—the partly simple pubescence, the 5-merous flowers, the acuminate petals.

San Martín: Zepelacio, near Moyobamba, 100 meters, *Klug 3313*, type.

Graffenrieda emarginata (R. & P.) Triana, Trans. Linn. Soc. 28: 71. 1871; 442. *Miconia emarginata* R. & P. Syst. 1: 106. 1798; Fl. Peruv. 4: *pl. 394*. 1802.

Branches and petioles robust, the latter 2–3.5 cm. long; leaves broadly ovate, basally rounded and emarginate, acutish, strikingly 5-nerved, dark brown-scurfy beneath, glabrous above; panicle ample, many-flowered; calyces sessile, about 3 mm. long, the broadly ovate lobes 1 mm. long; petals 4, oblong-spathulate, 2 mm. long, white; ovary 4-celled, puberulent at tip.—In the type, the brown-scurfy compound inflorescence is 2 dm. wide with a peduncle more than 3 dm. long, the leaves 15 cm. wide, 18 cm. long. F.M. Neg. 16885.

Huánuco: Chinchao, *Ruiz & Pavón*, type.—San Martín: Tarapoto, *Spruce 4566*.—Piura: Ayavaca, 2,600 meters, *Weberbauer 6389* (det. Markgr.). Bolivia; Colombia.

Graffenrieda floribunda Triana, Trans. Linn. Soc. 28: 71. *pl. 5*. 1871; 444.

Similar to *G. miconioides;* leaves rigid-coriaceous, to 2.5 dm. long, 18 cm. broad; flowers umbellate or verticillate, the pedicels 2–4 mm. long; calyx tube about 3 mm. long, the ovate lobes 1–1.5 mm. long; petals white, rose-tinted, 4–5 mm. long.—The leaves are typically bluntly rounded at apex, but the species seems doubtfully distinct. F.M. Neg. 32325. Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 10*.

San Martín: Tarapoto, *Spruce 4885*, type. Near Moyobamba, *Weberbauer 4631* (det. Cogn.), 290.—Loreto: A 5-meter tree, Pumayacu, *Klug 3139* (det. Gl.).

Graffenrieda foliosa Cogn. Bot. Jahrb. 42: 137. 1908.

Nearly glabrous, densely leafy shrub 6 meters high with stout, obtusely angled branches; leaves coriaceous on petioles to 2 cm. long, ovate-oblong, subrotund at base, obtuse, entire, 5-nerved, 6–9 cm. long, 3–4 cm. broad; panicles 8–12 cm. long, the many 5-merous flowers sessile; calyx lightly ashy-scurfy, the tube 4 mm. long, the limb rupturing irregularly into short persistent lobes; petals yellowish white, 2–3 mm. long; style to 8 mm. long.—F.M. Neg. 16886.

Huánuco: Prov. Huamalies, 2,000 meters, *Weberbauer 3544*, type.

Graffenrieda intermedia Triana, Trans. Linn. Soc. 28: 71. 1871; 442.

Glabrate, except the scurfy inflorescence, this strict, the branches slender; petioles 2–4 cm. long; leaves firm, ovate-elliptic, shortly

and rather abruptly acuminate, acutish at the rounded base, slightly 5-plinerved, to 15 cm. long, half as wide, often smaller; panicle many-flowered, scarcely 1 dm. long; calyx tube 2–2.5 mm. long, the 4 broadly rounded membranous lobes hardly 1 mm. long; petals 3 mm. long; ovary 3-celled; style 4–5 mm. long.—The leaves are very shortly plinerved with a few scattered scales, dark green above, light colored beneath. F.M. Neg. 21168.

San Martín: Tarapoto, *Spruce 4253*, type.

Graffenrieda limbata Triana, Trans. Linn. Soc. 28: 70. 1871; 440.

Smooth, except for the ashy-scaly ample inflorescences; petioles 4–5 cm. long; leaves 3-nerved, the lateral near the margin, the horizontal veins prominent, abruptly and shortly acute, narrowed to base, somewhat obovate, lighter colored beneath, 1.5–2 dm. long, 6–10 cm. broad, sometimes smaller; panicles long-peduncled, with many flowers, the 5 obliquely-obovate petals 7 mm. long; calyx tube 10-costate, 5–6 mm. long, the limb rupturing irregularly in 2–4 lobes, 2 mm. long; ovary 4–5-celled, the capsule with as many ribs.—An open shrub or small tree about 4 meters high, with narrow panicles of white flowers, large for the genus. Flowers pinkish-lavender with touch of white (Woytkowski); pale rose (Klug).

Junín: La Merced, *5568*. Colonia Perené, *Killip & Smith 24953* (det. Gl.).—San Martín: Tarapoto, *Ule 6456* (det. Pilger); sandy woods, *Spruce 4261*, type; *Williams 5893* (det. Gl.); *5631*. Near Moyobamba, 800 meters, Weberbauer *4569* (det. Cogn.); 290; *Klug 3252* (det. Gl.). Rioja, *Woytkowski 6*. "Nispero sacha," "dispera sacha."

Graffenrieda miconioides Naud. Ann. Sci. Nat. sér. 3. 18: 118. 1852; 444.

Terete branches as the ample panicles, slightly ashy-puberulent; petioles 2–3 cm. long; leaves obovate, oblong, acute or shortly acuminate, acutish at base, moderately coriaceous, 8–18 cm. wide, somewhat lustrous above; flowers subfasciculate or aggregate, the pedicels 1–2 mm. long; calyx tube 2–2.5 mm. long, the broadly ovate lobes 1 mm. long; petals 4, obovate, 6 mm. long, nearly as broad at the top; anthers strongly recurved, very acutely produced basally; ovary partly free, 3-celled.—Trunk 9 meters high, 15 cm. in diameter (Tessmann). Compare *G. floribunda*. F.M. Neg. 36204.

Loreto: Iquitos, *Tessmann 5586* (det. Markgr.). Brazil.

Graffenrieda Moritziana Triana, Trans. Linn. Soc. 28: 70. 1871; 443.

Slenderly branched, somewhat scurfy-puberulent, especially the inflorescence; petioles 1–3 cm. long; leaves membranous, green both sides, but loosely scurfy on the nerves beneath, oblong-lanceolate, long-acuminate, acute or slightly rounded at base, distinctly reticulate, shortly 5-plinerved, about 12 cm. long, 5 cm. broad; panicles 8–12 cm. long, the subverticillate pedicels filiform, 4–5 mm. long; calyx tube narrowly campanulate, 3–4 mm. long, the broadly triangular lobes 1 mm. long; petals 4, yellowish, broadly oblong, 4 mm. long; capsule lightly 8-costate.—Apparently the younger branchlets are straggling. F.M. Neg. 16888.

San Martín: Tocache, *Poeppig 2045* (det. Krasser). Venezuela; Colombia.

Graffenrieda stenopetala Ule, Notizbl. Bot. Gart. Berlin 6: 353. 1915.

Young branches, petioles, peduncles and calyces rusty-scurfy-tomentulose; petioles 4–5.5 cm. long; leaves subcoriaceous, ovate-elliptic, rounded at base, obtusely acuminate, about 15 cm. long, 7–9 cm. wide, 7-plinerved and reticulate beneath, closely rusty-tomentose; flowers in panicled fascicles, 5-merous, sessile, bracteolate; calyx tube 3.5 mm. long, the acute teeth 1.5 mm. long; petals whitish, narrowly lanceolate-linear, acute, 5 mm. long, less than 1 mm. broad; ovary 3-celled, costate, slightly scurfy; style 7 mm. long.—The Peruvian collection differs from type in having only 5 nerves, more loosely borne flowers and less pubescent inflorescence (Gleason). F.M. Neg. 16894.

Loreto: *Killip & Smith 24950* (det. Gl.). British Guiana.

Graffenrieda trichanthera Gleason, Bull. Torrey Club 63: 533. 1936.

Small tree, glabrous except the minutely puberulent calyx; petioles to 10 mm. long; leaves coriaceous, slightly 3-plinerved, lanceolate, rounded at base, acute, entire, to 13 cm. long, 3.5 cm. wide or the smaller less than half as large; flowers 4-merous, sessile, crowded in dense heads; calyx tubular-campanulate, about 4 mm. long, at anthesis with 2–4 scarious irregular lobes; petals 3.2 mm. long; anther connective and short spur slightly setose; ovary free, 2.3 mm. long, glabrous, 4-celled.

San Martín: Zepelacio, near Moyobamba, 1,100 meters, *Klug 3298*, type.

22. CALYPTRELLA Naud.

Glabrous trees or shrubs, or the younger parts pulverulent, with entire, 3–7-nerved, or very shortly plinerved leaves and small flowers often subumbellate at the ends of the peduncles. Calyx tube pubescent, before anthesis crowned with the closed top-shaped limb. Connective somewhat produced, bearing a porrect appendage at its juncture with the filaments. Seeds needle-shaped.—The genus may be distinguished in flower from *Conostegia*, with similar calyx, by the appendaged stamen and different seeds.

Flowers 5–9-merous; leaves and inflorescences ample. . .*C. cucullata.*

Flowers 4-merous.

Leaves ample, stellate-puberulent beneath.....*C. robusta.*

Leaves mostly narrower than 7 cm., glabrous or glabrate.

Leaves 1 dm. long or longer, membranous; calyx scarcely costate or ecostate .....*C. gracilis.*

Leaves 8 cm. long or shorter, coriaceous; calyx 8-costate. *C. tristis.*

Calyptrella cucullata (Pav.) Triana, Trans. Linn. Soc. 28: 72. *pl. 5.* 1871; 453. *Melastoma cucullata* Pav. ex D. Don, Mem. Wern. Soc. 4: 317. 1823. *Conostegia cucullata* D. Don, l.c.

Shrub or tree, the thick, somewhat fistulose branches obscurely tetragonous; petioles elongate, the leaf blades broadly ovate, distinctly 5–7-nerved, often 2 dm. long or longer and fully half as wide to nearly as wide; panicles many-flowered, 1–3 dm. long, the pedicels 2–8 mm. long; calyx tube 2.5–3 mm. long, the caducous pointed limb 5 mm. long; petals 5–6 mm. long.—A scaly puberulence is mostly confined to the calyx, the nodes and the petioles. Ants are sometimes found in the hollow branchlets.

Huánuco: Pozuzo, *4701.* Pampayacu, *Kanehira 33.* Casupi, *Sawada 102.* Valley of the Monzón, *Weberbauer 3503;* 284. Chinchao, *Ruiz & Pavón,* type.—Junín: La Merced, *5596.* Chanchamayo Valley, *Schunke 266.*—San Martín: Tarapoto: Spruce *4329; 4899; Williams 6459; 7109* (det. Gl.). Ecuador. "Nispero," "dispero."

Calyptrella gracilis Triana, Trans. Linn. Soc. 28: 72. 1871; 454.

A small tree with lightly pulverulent, slender, 4-angled branchlets and small (1–2 dm. long), membranous, lanceolate-acuminate leaves, minutely and sparsely brown-scurfy beneath; three leaf nerves prominent, the 2 outer fainter ones joining the middle-laterals above the shortly attenuate leaf base; petioles 2 cm. long; petals yellow,

to 2 mm. long, ovate; anther connective shortly spurred dorsally.—Var. *ovata* Huber, Bol. Mus. Goeldi 4: 595. 1906, has ovate leaves, truncate at base. F.M. Neg. 25867.

Junín: Chanchamayo Valley, *Schunke 440; 441*.—San Martín: Tarapoto, *Spruce 4896*, type. Río Tocachi, *Poeppig 2045*.—Loreto: Cerro de Canchahuaya (*Huber 1427*, type var.).

Calyptrella robusta Cogn. Bot. Jahrb. 42: 138. 1908.

Leaves densely stellate-puberulent beneath; calyces sessile, densely furfuraceous, 4-merous, the tube 2 mm. long; petals 1.5–2 mm. long; capsule subglobose, 3 mm. thick.—Otherwise similar to *C. cucullata*. F.M. Neg. 16882.

Huánuco: In shrub-tree formation, 1,600 meters, *Weberbauer 3572*, type.

Calyptrella tristis Triana, Trans. Linn. Soc. 28: 72. 1871; 454.

Shrub or small tree with rounded, ovate, bluntly acute, glabrous but distinctly papillose leaves more or less rounded at base, 3–5-nerved or very shortly plinerved, rather conspicuously ribbed, often 8 cm. long and half as broad, sometimes much smaller; petioles about 12 mm. long; inflorescence 4–6 cm. long, narrow in flower; petals white, 2–2.5 mm. long; calyx, especially in fruit, conspicuously ribbed.—F.M. Neg. 16883.

San Martín: Tarapoto, *Spruce 4823*, type; *Williams 5987* (det. Gl.).—Loreto: Pumayucu, 2-meter shrub, 600–1,200 meters, *Klug 3213* (det. Gl.).

23. CENTRONIA D. Don

Similar to *Calyptrella* but the flowers large, showy, the anther connective not produced, the seeds pyramidal. Leaves entire or crenulate-dentate, often thick or fleshy, finely reticulate-veined beneath, glabrous or rusty-tomentose or pilose on the under surface, as sometimes also the branches.

Leaves 5–7-nerved, tomentose or pilose beneath.

Pubescence dense, tomentose.....*C. excelsa.*

Pubescence loose, pilose.....*C. peruviana.*

Leaves 3-nerved, glabrous.

Calyx scurfy-tomentose.....*C. reticulata.*

Calyx densely setose.....*C. laurifolia.*

Centronia excelsa (Bonpl.) Triana, Trans. Linn. Soc. 28: 72. *pl. 5.* 1871; 460. *Rhexia excelsa* Bonpl. Rhex. 90. *pl. 34.* 1823.

Stems herbaceous, often rooting, 2–3 meters high, the branches tetragonous, brown-scurfy or glabrate in age; petioles 2–5 cm. long; leaves ample, often somewhat plinerved, broadly ovate, crenulate, glabrous and more or less bullate-reticulate-veined above, at first densely and softly tomentose beneath; calyx densely tomentose, 1.5 cm. long and broad in fruit; flowers 5–6-merous; anther connective appendaged posteriorly; ovary smooth.

Amazonas: Chachapoyas, *Mathews.* Ecuador.

Centronia laurifolia D. Don, Mem. Wern. Soc. 4: 315. 1823; 455.

A tree with stout, glabrous branches and petioles, and coriaceous, glabrous, elliptic-caudate, acuminate, entire, 3-plinerved leaves, to 2.5 dm. long, 10 cm. wide; flowers subsessile, the broadly ovate, subacute petals 1 cm. long; anthers 7–8 mm. long, with a very sharp spur; style nearly filiform, 12 mm. long; ovary dissected apically into 5–6 spur-like projections.—The calyx is conspicuously setose, the flower bud 18 mm. long. F.M. Neg. 29495.

Huánuco: Chicoplaya, *Ruiz & Pavón,* type.

Centronia peruviana Macbr., spec. nov.

Arbuscula 3 m. alta; ramulis petiolis paniculisque laxe denseque rufo-villosis; petiolis 2–5 cm. longis; foliis ellipticis basi rotundatis, apice acutis vel paullo acuminatis, manifeste calloso-crenulatis, breviter 5-plinerviis, 18 cm. longis, 10 cm. latis, supra glabris, obscure vel leviter et grosse reticulato-venosis, subtus longe fulvo-pilosis praecipue ad nervos nervulosque et stellato-pubescentibus, haud bullatis; pedicellis 7 mm. longis; alabastris solum apiculatis; calycis tubo 12 mm. longo haud sulcato, limbo circa 15 mm. longo; petalis 2.4 cm. longis; filamentis antheraeque subaequalibus 10 et 12 mm. longis, connectivo appendice obtuso instructo, appendice superne leviter tuberculato; ovario vertice obscure 5-lobato; stylo 2 cm. longo.—Nearly *C. grandiflora* Standl. of Panama with more acuminate bullate-reticulate leaves; both species seem to be closely allied to *C. tomentosa* Cogn., 460, of Ecuador and *C. excelsa,* species with short, crinkly-tomentose pubescence. *C. peruviana,* further, has a different connective appendage than the latter but apparently the same as that of the former; *C. tomentosa,* however, has a beaked bud, the beak 5-parted. Flowers between pink and rose (Stork & Horton).

Huánuco: Carpish, bank of mountain stream, 2,850 meters, *Stork & Horton 9928*, type.

Centronia reticulata Triana, Trans. Linn. Soc. 28: 71. *pl. 5.* 1871; 456.

Similar to *C. laurifolia* but the leaves nearly basally 3-nerved, the calyx densely furfuraceous and not at all or only sparsely setose; pedicels 1–3 mm. long; anthers 5–6 mm. long, the cells crisply undulate, the connective shortly spurred; ovary 5-celled, apically dentate; style 9 mm. long.

San Martín: Mountains of La Campana, *Spruce 4840*, type.—Loreto: Cerro de Escaler, *Ule 6747* (det. Pilger).—Huánuco: Chicoplayo, *Ruiz & Pavón* (det. Markgr.).

24. TESSMANNIANTHUS Markgr.

Tree with large 3-nerved glabrous leaves, the lateral nerves near the margin and small 5-merous flowers with obtusely acuminate petals, borne in large terminal panicles. Calyx campanulate, truncate. Stamens very unequal and dissimilarly appendaged (connective not produced), the larger with 2 acuminate dorsal appendages, the smaller obtuse, parted, dehiscent by one broad pore, the connective indistinctly biauricled posteriorly.—Allied to *Graffenrieda* (Markgr.).

Tessmannianthus heterostemon Markgr. Notizbl. Bot. Gart. Berlin 9: 1141. 1927.

Tree 30 meters high, with obovate-obtuse leaves to 1.5 dm. long, 8 cm. wide; inflorescence paniculate, 12 cm. long, 8 cm. wide, ebracteate; pedicels 3 mm. long; calyx glabrous, 4 mm. long, 4 mm. across, the lobes scarcely marked; petals 4 mm. long; longer filaments 4 mm., anthers 7 mm., the appendages 2 mm. long; shorter filaments 2.5 mm., anthers 3 mm. long, divergent 1 mm. at apex, auricles 0.5 mm. long; style 8 mm. long; ovary 3-celled, glabrous.—F.M. Neg. 17313.

Loreto: Mouth of Santiago, *Tessmann 4585*, type.

25. ALLONEURON Pilger

Meiandra Markgr. Notizbl. Bot. Gart. Berlin 9: 1142. 1927.

Shrubs or trees with pinnately veined leaves like *Mouriria* but with capsular fruit. Leaves crowded at the ends of the branches, long-elliptical-lanceolate or narrowly cuneiform, ciliate, narrowed to

the rather abruptly dilated base. Flowers small, 4- or 5-merous, in axillary panicles with few long, slender, or filiform branches. Anther connective shortly spurred. Ovary inferior, 2-celled.

Alloneuron majus Markgr. ex Macbr. Trop. Woods 17: 13. 1929. *Meiandra maior* Markgr. Notizbl. Bot. Gart. Berlin 9: 1142. 1927.

A tree to 30 meters high with few, many-flowered panicles of small white blossoms; leaves chartaceous, glabrous except the ciliate margins, 6–8 cm. wide; inflorescence 15 cm. long, about 6 cm. wide, scurfy-puberulent, the flowers secundly crowded, the 4 petals 3 mm. long.—The specific name inadvertently written *maior* by me in Tropical Woods. Illustrated, Markgr. l.c., page 1143. F.M. Neg. 17395.

Loreto: Mouth of Río Santiago, *Tessmann 4625*, type.

Alloneuron Ulei Pilger, Verh. Bot. Ver. Brandenb. 47: 185. 1905. *Meiandra minor* Markgr. Notizbl. Bot. Gart. Berlin 9: 1142. 1927.

Similar to *A. majus* but leaves smaller; inflorescence to about 9 cm. long, a third as broad, the flowers scattered on the filiform branches; petals 5, 2.5 mm. long, yellowish.—F.M. Neg. 17396.

Loreto: In rocks at the Pongo de Cainarachi, *Ule 6417*, type. Pongo de Manseriche, *Tessmann 4853*.

26. MACROCENTRUM Hook f.

Lax or weak-stemmed, usually branching, nearly glabrous herb with ciliate, oblong-ovate, 3–5-nerved leaves, small 4–5-merous flowers borne in secund cymes or solitary on long peduncles. Stamens alike or nearly, the anther connective with 1 slender spur at base directed backward. Ovary free, 3-celled. Capsule 3-cornered, each enclosed in a persistent deeply 8–10-costate calyx.—Cf. *Salpinga*, with which Baillon merged it.

Macrocentrum fasciculatum (L. C. Rich.) Triana, Trans. Linn. Soc. 28: 79. 1871; 534. *Aulacidium fasciculatum* L. C. Rich. ex DC. Prodr. 3: 113. 1828. *M. peruviana* (Cogn.) Macbr. Field Mus. Bot. 4: 177. 1929. *Salpinga fasciculata* DC. l.c.

Stems simple, 1–2 dm. long; petioles 5–13 mm. long; leaves 2–3 cm. long, 10–17 mm. broad; calyx in fruit 13–14 mm. long; flowers pale lilac.—This is the var. *peruviana* Cogn. Bot. Jahrb. 42: 138. 1908; the typical form is often much-branched, the petioles longer,

the leaves larger, but the fruiting calyx only 8–9 mm. long, and may be specifically distinct.—The similar *M. cristatum* (DC.) Triana has 4-merous flowers, 8-costate calyx. F.M. Neg. 16916 (var.). Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 14*.

San Martín: North of Moyobamba, 1,500 meters, *Weberbauer 4645*. French Guiana.

27. **SALPINGA** Mart.

More or less suffrutescent and branched or herbaceous, simple-stemmed herbs with ovate 5–7-nerved thin leaves and medium-sized white or roseate flowers, sessile or subsessile, secund. Calyx tube thick-ribbed, enclosing the 3-angled capsule, the sepals obscure. Stamens 10, isomorphic or nearly, the connective of the subulate anthers with an elongate linear appendage at the base directed forward and a minute basal spur.

Salpinga ciliata Pilger, Verh. Bot. Ver. Brandenb. 47: 167. 1905.

Ascending or decumbent, about 1 dm. high; leaves 4.5–8 cm. long, 3–5 cm. broad, densely long-fimbriate-ciliate on the margin.—F.M. Neg. 16913.

Loreto: Cerro de Cumbasso, 800 meters, *Ule 6743*, type.

Salpinga secunda Schrank & Mart. ex DC. Prodr. 3: 113. 1828; 536.

Stems erect, often suffrutescent below and branched or simple, fleshy above; leaves 6–10 cm. long, 5–7 cm. broad, sparsely or minutely and inconspicuously ciliate on the margins, sometimes a little hirsute above, thin, crowded, cuneate at base; fruiting calyx elongating to 16 mm., deeply 10-sulcate.—F.M. Neg. 16914.

Loreto: Sarayacu to Catalina, Pampa del Sacramento (*Huber 1509*). Iquitos, *Ule 6744* (also many collections by *Killip & Smith*, as *29921*, and *Klug 517*, all det. Gl.). Timbuchi on Río Nanay. *Williams 944; 945*. To Guiana. "Puca mullaca," "mullaca azul."

28. **MONOLENA** Triana ex Benth. & Hook.

Stemless, succulent, glabrous herbs with large flowers borne in scorpoid cymes on short slender scapes. Calyx 3-angled, glabrous, the lobes simple. Stamen connective anteriorly spurred and posteriorly tubercled. Capsule topped with the persistent 3-lobed base of the style.

Monolena primulaeflora Hook. f. Bot. Mag. *pl. 5818.* 1870; 538.

Leaves firm but drying thin, broadly elliptic, 3–5-plinerved, often red-purple beneath.

Loreto: Mouth of Santiago, *Tessmann 4300* (det. Markgr.).—San Martín: Moyobamba, *Weberbauer 4731;* 288. Without locality (*Spruce; Lechler 2370*).—Río Acre: *Ule 9668.*—Junín: Pichis Trail, *Killip & Smith 26131; 26505* (det. Gl.). Colombia.

29. **TRIOLENA** Naud.

More or less pubescent herbs with large, 5–7-plinerved leaves and small flowers borne in scorpoid spikes or racemes. Connective of the larger anthers anteriorly 3-winged. Calyx finally 3-winged, enclosing the capsule, widely curved at summit.—This genus and *Monolena* and *Diolena* are only academic segregates of *Salpinga;* the aspect is exactly that of *Diolena.* Rationally, similar segregation is required in other tribes.

Triolena Barbeyana Cogn. Melast. 542. 1891.

Leaves narrowly ovate, distinctly unequal in each pair, glabrous above, puberulent on the nerves beneath; calyx densely hirsute.—The similar *T. hirsuta* Triana has been collected in adjacent lands; its nearly equal leaves are very sparsely setulose or glabrous above but appressed hirsutulous on the nerves beneath. *T. pustulata* Triana, of Ecuador, is similar but the oblongish leaves are cordate at base, bullate above.

Peru(?): Without locality, *Pavón,* type.

30. **DIOLENA** Naud.

Herbs, usually simple with often unequal ovate-oblong or lanceolate, acute or acuminate leaves and white flowers secundly borne in scorpoid racemes or spikes. Stamen connective anteriorly 2-spurred.—With *Triolena,* very similar to *Salpinga.*

Diolena amazonica Pilger, Verh. Bot. Ver. Brandenb. 47: 168. 1905.

Stems creeping and rooting at base, subligneous, 1.5–3 dm. high, above with the petioles densely villous-setose; leaves unequal in each pair, the larger irregularly subelliptic, acuminate, shortly villous-setose beneath on the reticulate nerves, the margin irregularly serrulate and setose, 11–12 cm. long, about half as wide; smaller leaves lanceolate-elliptic, 4–6 cm. long; rachis setose-villous, 5–6 cm. long;

petals white, 6–7 mm. long; stamens unequal, 5 with connective merely tuberculate not long produced; fruit 3-winged, excavated apically, 9 mm. broad. F.M. Neg. 16906.

Junín: Puerto Bermúdez, *Killip & Smith 26660* (det. Gl.). Pebas, *Killip & Smith 25385;* Río Pichis, *Killip & Smith 26800.*—Loreto: *Williams 1804; 3421.* Soledad, *Killip & Smith 29568.* Brazil.

31. LEANDRA Raddi

Herbs or low shrubs conveniently grouped apart from *Miconia* by their ovate to linear, always acute or aristate petals, the bristle if present borne below the petal tip. Anther connective often elevated near base, rarely obscurely or minutely prolonged.—Even though there are now known some species of *Miconia* with pointed petals, these are typical of that genus in other respects, that is, especially the anthers are somewhat appendaged or the connective spurred; there is a certain aspect, too, to most species of *Leandra* distinct from that of *Miconia*, yet the genus, all species considered, is scarcely a natural concept.—Inflorescence really terminal but some species sometimes suggest *Ossaea.*—Besides the following, the wood of *Williams 45* from lower Río Itaya has been described by the collector, Field Mus. Bot. 15: 381. 1936, under the name "yutobanco"; the collection is in fruit and may not be a *Leandra.*

Flowers not borne secundly.

Flowers fasciculate, sessile.

Leaves oblong or nearly, to about 2 cm. wide.

Pubescence stellate-scurfy.....*L. nervosa.*

Pubescence mostly hirsutulous.....*L. Cogniauxii.*

Leaves broader and longer.

Branches setose; calyx 4–5 mm. long.

Leaves 3–5(–7) cm. wide; calyx nearly 3 mm. wide. *L. crenata.*

Leaves 6.5–9.5 cm. wide; calyx about 2 mm. wide. *L. Raimondiana.*

Branches appressed-sericeous-pubescent; calyx about 2 mm. long.....*L. Francavillana.*

Flowers solitary or in any case pedicellate and not secund.

Leaves 3-nerved.....*L. cuspidata.*

Leaves 5–7-nerved or plinerved.

Leaves rounded-cordate or unequal at base.

Branches glabrous; leaves basally inequilateral.
L. Boissieriana.

Branches hirtellous; leaves equally rounded at base.
L. aristigera.

Leaves attenuate to base; the branches glabrous or hirsute.
L. chaetodon.

Flowers borne secundly on the spreading inflorescence branches, sessile.

Pubescence of stems and petioles ascending-appressed, sometimes becoming loosely crisped.

Leaves densely appressed-pilose beneath; inflorescence a narrow, elongate thyrse, ample, the aggregate flowers not obviously secund.....*L. Francavillana.*

Leaves lightly pilose beneath; inflorescence small, about as broad as long, open, the flowers markedly secund.

Flowers 4-merous; anthers 1 mm. long; ovary 3-celled, glabrous; leaves densely minutely denticulate.
L. secundiflora.

Flowers 5-merous; anthers, except in *L. divaricata* with subentire leaves, about 1.5 mm. long.

Leaves subentire; ovary 3-celled, glabrous; calyx eglandular.
L. divaricata.

Leaves densely denticulate; ovary 5-celled, setulose; calyx usually somewhat glandular.....*L. secunda.*

Pubescence of stems and petioles definitely divaricate, usually more or less reflexed or arcuately reversing.

Pubescence of branchlets glandular, divaricate, short; ovary 6-celled.....*L. solenifera.*

Pubescence of branchlets eglandular, often more or less reflexed, long; ovary 3–5-celled.

Leaves at least twice longer than broad; ovary 5-celled or, if 3-celled, pubescence closely reflexed.

Calyx trichomes about 2.5 mm. long or longer; ovary setulose.

Leaves 5(–7)-nerved; petals 2 mm. long....*L. longicoma.*

Leaves 7–9-nerved; petals 3–4 mm. long.....*L. reversa.*

Calyx trichomes about 2 mm. long or shorter; ovary glabrous or minutely glandular.

Pubescence dense, reflexed-arcuate; ovary glandular.
L. dichotoma.

Pubescence reflexed, subappressed; ovary glabrous. *L. retropila.*

Leaves rounded-ovate, less than twice longer than broad; ovary 3-celled; pubescence divaricate. . . . . *L. rotundifolia.*

Leandra aristigera (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 185. 1886; 683. *Clidemia aristigera* Naud. Ann. Sci. Nat. sér. 3. 17: 366. 1851.

Young branches, petioles and inflorescence densely hirtellous with long-spreading, mostly minutely gland-tipped trichomes; leaves very shortly 5–7-plinerved, rounded at base, caudate-acuminate, loosely long-hirtellous beneath, sparsely so above, about 15 cm. long, 9 cm. wide, thin; calyx densely glandular-hispid, the tube 3 mm. long, the filiform bristle-tipped teeth 1.5 mm. long; petals ovate-oblong, stellate-scurfy without, 2 mm. long, bearing on the back below the tip a glandular setulose bristle 3–4 mm. long; style 5 mm. long.—F.M. Neg. 36222.

Lima: Near Lima, *Gay*. Brazil.

Leandra Boissieriana Cogn. in Mart. Fl. Bras. 14, pt. 4: 184. 1886; 683.

Branches glabrous; petioles and leaf margins ciliate-hirsute, the leaves ovate, scarcely attenuate to the rounded base, slenderly acuminate, 10–13 cm. long, 6 cm. wide, 5–7-plinerved; pedicels bibracteolate, 4–8 mm. long; calyx densely glandular-hirsute, 3.5–4 mm. long, the teeth 1.5 mm. long; petals triangular subulate, long-acuminate-aristate, glandular-pilose dorsally, 3–4 mm. long; style 4 mm. long.—F.M. Neg. 34166.

Huánuco(?): *Ruiz & Pavón*, type.

Leandra chaetodon [Schrank & Mart.] Cogn. in Mart. Fl. Bras. 14, pt. 4: 178. 1886; 678. *Melastoma chaetodon* Schrank & Mart. ex DC. Prodr. 3: 117. 1828, in syn. *Spennera chaetodon* DC. l.c.

Branches slender, glabrous; petioles 5 mm. long or longer, sparsely glandular-ciliate as the young leaves, these soon glabrous, lanceolate-ovate, attenuate at base, long and narrowly acuminate, to 16 cm. long, 4–6 cm. wide, 5-plinerved, the 2 basal nerves faint; flowers in glabrous or glabrate corymbs or racemes, 2–6 cm. long, the white lanceolate-subulate petals 2–3 mm. long; calyx tube 2–3 mm. long, the teeth 1–2 mm. long; fruit blue, subglobose, 4 mm. thick.—F.M. Neg. 6414.

Huánuco: Pueblo Nuevo, *Ruiz & Pavón.*—San Martín: Tocachi, *Poeppig 1869.*—Junín: Pichis Trail, *Killip & Smith 26211* (det. Gl.). —Loreto: *Killip & Smith 26928.* Iquitos, *Killip & Smith 26971; Williams 1328; 3762* (det. Gl.). La Victoria, *Williams 2687;* Río Nanay, *Williams 835.* Without locality: *Gay.* Venezuela; Brazil; Colombia. "Sinchi mullaca."

Leandra Cogniauxii Ule, Notizbl. Bot. Gart. Berlin 6: 367. 1915. *L. purpurascens* Cogn. Bot. Jahrb. 42: 139. 1908, not (DC.) Cogn.

Branches, petioles and peduncles densely setulose with ascending reddish trichomes; petioles 2–5 mm. long; leaves rigid, drying black, and minutely scabrous above, slightly stellate and setulose on the veins and 5 nerves beneath, narrowly oblong, little narrowed basally, acutish, 3–5.5 cm. long, 6–15 mm. broad; calyx sparsely scurfy and setulose, sessile, the narrowly campanulate tube 2 mm. long, the outer teeth 0.5 mm. long; petals pale purple, narrowly triangular, about 3 mm. long; style 5–6 mm. long, the ovary glabrate.—Allied to *L. nervosa,* the inflorescence a narrow thyrse of glomerate flowers. F.M. Neg. 16926.

San Martín: North of Moyobamba, 1,100 meters, *Weberbauer 4604,* type.

Leandra crenata (Pavón) Cogn. in Mart. Fl. Bras. 14, pt. 4: 137. 1886; 649. *Melastoma crenata* Pav. ex D. Don, Mem. Wern. Soc. 4: 308. 1823, in syn. *Clidemia crenata* D. Don, l.c.

Branches more or less harshly hispid, the younger densely so; leaves 5- or partly 7-nerved (the outer 2 nerves faint and only basal), densely hirsute-strigillose above, villous-hirtellous beneath; petioles 1–2 cm. long; panicle thyrsoid; calyx densely long-hirsutulous, the tube 4–5 mm. long, the outer teeth half as long; petals yellowish, oblong-lanceolate, 4 mm. long; style about 10 mm. long. Flowers white to pink (Stork & Horton).—The leaves are often 8–10 (12) cm. long, 3.5–4 (5) cm. wide, gradually acuminate, minutely cordate at base, the surface generally concealed by the fulvous stiff pubescence; the aspect of the shrub, which is sometimes 2 meters high, suggests *Clidemia.* F.M. Neg. 16929.

Huánuco: Cuchero, *Poeppig 1397; Dombey.* Casapi, *Poeppig 83.* —Puno: Valley of Río Sandía, *Weberbauer 1103* (det. Cogn.; 278). Huancavelica: East of Surcubamba, in bushwood, 2,700 meters, *Stork & Horton 10349.* Without locality, *Pavón,* type. Paraguay to Bolivia and Brazil.

Leandra cuspidata (Triana) Cogn. in Mart. Fl. Bras. 14, pt. 4: 175. 1886; 675. *Oxymeris cuspidata* Triana, Trans. Linn. Soc. 28: 93. 1871.

Younger branches more or less densely stellate-furfuraceous, the oblong-lanceolate, long-caudate-acuminate leaves scarcely so beneath, glabrous and lustrous above, subcoriaceous, unequal, the larger 7–10 cm. long, 2.5–4 cm. wide, the smaller hardly half as long; panicles many-flowered, often nodding, 6–10 cm. long, sometimes very diffuse; pedicels 1–3 mm. long; calyx tube 2 mm. long, obtusely 5-lobed; petals linear-subulate, 2 mm. long; style 3 mm. long; fruit black, globose, 4 mm. thick.—Species well-marked by the 3-nerved leaves and the open panicles. F.M. Negs. 36225; 21173.

Loreto: Mouth of Santiago, *Tessmann 5519* (det. Markgr.). Brazil.

Leandra dichotoma (Pav.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 200. 1886; 692. *Melastoma dichotoma* Pav. ex D. Don, Mem. Wern. Soc. 4: 307. 1823, in syn. *Clidemia dichotoma* D. Don, l.c.

Pubescence of branches more or less spreading and crisply hirsutulous, red or reddish-brown, drying black at times, eglandular; petioles elongate; leaves ovate, acuminate, 7–9-nerved, membranous, rather densely villous, especially beneath; panicle-branches secund; inflorescence and calyx pubescence dense and spreading, eglandular; calyx tube 2.5 mm. long, the teeth scarcely 1 mm. long; petals lanceolate-acuminate, about 2.5 mm. long, style 4 mm. long, the fruit 4–5 mm. thick, purple.—The pubescence, at least sometimes, is notably soft, the inflorescence branches deep red. F.M. Neg. 16935.

Junín: Chanchamayo Valley, *Schunke 324*. San Ramón, *Killip & Smith 24736* (fide Gleason, *L. reversa*). La Merced, *5509; Schunke 98; 149; 101; 324; 1484; 1456*.—Huánuco: Pampayacu, *5041; Kanehira 39*. Chicoplaya, *Ruiz & Pavón*, type. Cuchero, *Poeppig 1448*.—San Martín: Tocachi, *Poeppig 1822*. Tarapoto, *Spruce 4520; Williams 7186* (det. Gl.). Near Moyobamba, *Klug 3485*. San Roque, *Williams 6934*.—Loreto: Río Mazán, *Schunke 173; Killip & Smith 24803*.—Río Acre: *Ule 9680*. Bolivia to Central America.

Leandra divaricata (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 196. 1886; 689. *Clidemia divaricata* Naud. Ann. Sci. Nat. sér. 3. 17: 373. 1851.

Often marked by the pubescence of the branches, this rigid, erect, appressed; petioles 1–4 cm. long; leaves ovate, acuminate,

shortly 5-plinerved, sparsely setulose above, pilose beneath, (5) 8–9 cm. long, about 3 cm. broad; panicle small, few-flowered, the divaricate branches secund; flowers 5-merous, remote, the linear-subulate petals 1.5–2 mm. long, the calyx tube as long, its teeth nearly 1 mm. long; anthers about 1 mm. long; style only 2.5 mm. long; ovary glabrous, 3-celled. The leaves of the Guiana form may be 3–6 cm. wide, and the Williams and Schunke specimens with leaves 3 cm. wide may belong elsewhere.

Loreto: Yurimaguas, *Poeppig;* Nauta, *Spruce 3858* (det. K. Rechinger); Río Mazán, *Schunke 252;* Río Nanay, *Williams 783.* Brazil to Costa Rica and British Guiana.

Leandra Francavillana Cogn. in Mart. Fl. Bras. 14, pt. 4: 197. *pl. 43.* 1886; 690.

A tall shrub with ovate, beautifully acuminate, 7-plinerved or 7-nerved leaves, densely appressed-pilose beneath with long-rusty silky trichomes, sparsely and minutely setulose above, about 1 dm. long and half as broad; inflorescence a narrow thyrse, the 5-merous flowers subglomerate, the linear subulate petals 2 mm. long, the calyx tube and calyx teeth as long; ovary 3-celled, setulose at apex, the style 4 mm. long; anthers 1–1.5 mm. long.—The following collections were referred here by Gleason but seem to be *L. secunda* or new; the inflorescence is diffuse, the flowers secund, the leaves sparsely hairy, shortly acuminate. F.M. Neg. 36230.

Junín: Pichis Trail, *Killip & Smith 26223.*—Loreto: Near Iquitos, (?)*Williams 8238; Mexia 6437.* La Victoria, *Williams 2686; 2555.* Río Mazán, *Schunke 70.*

Leandra longicoma Cogn. in Mart. Fl. Bras. 14, pt. 4: 202. *pl. 43.* 1886; 693.

Similar to *L. dichotoma* but the 5-nerved leaves only sparsely pilose beneath and the calyx pubescence very long, the petals somewhat shorter, 2 mm. long.—Calyx typically shaggy-villous, the outer lobes little shorter than the tube. The leaves are slightly plinerved in the type; apparently common in department of Loreto, many specimens of recent collectors being so determined by Gleason. The calyces vary in this material. The flowers are yellow, the fruit blue (Schunke). F.M. Neg. 32348.

Loreto: Yurimaguas, *Poeppig,* type; *Williams 7838.* Pampas del Ponasa, *Ule 6740* (det. Pilger). Lower Río Nanay, *Williams 600; 631; 377; 704.* Pebas, *Williams 1693.* La Victoria, *Williams 2708.* Caballo-Cocha, *Williams 2327.* San Antonio, Río Itaya, *Killip &*

Smith 29453. Near Iquitos, *Klug 1150.* Río Mazán, *Schunke 387.* —Río Acre: *Ule 9670.* Costa Rica. "Muyaca," "mullaca."

Leandra nervosa (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 73. 1886; 657. *Clidemia nervosa* Naud. Ann. Sci. Nat. sér. 3. 17: 341. 1851.

Branches, petioles and peduncles scurfy-stellate, some setae intermixed; petioles 3–7 mm. long; leaves 5-nerved, oblong-lanceolate, acuminate, only 1.5–2 cm. wide, 8–10 cm. long, glabrous above, a little stellate-furfuraceous beneath or villous; panicles compact, 5–7 cm. long; calyx sessile, puberulent-scurfy, the tube 2.5 mm. long, the outer teeth scarcely 0.5 mm. long; petals white, oblong, shortly acuminate, 3 mm. long; ovary scarcely pilose apically.—F.M. Neg. 25908.

Amazonas: Chachapoyas, *Mathews 1265.*—Ayacucho: Ccarrapa, *Killip & Smith 22370* (det. Gl.). To Colombia.

Leandra Raimondiana Markgr. Notizbl. Bot. Gart. Berlin 13: 464. 1937.

Similar to *L. crenata;* branchlets quadrangular; petioles, inflorescence and leaves beneath densely villous, the latter broadly ovate, 9.5–13 cm. long, 6.5–9.5 cm. wide, 7-plinerved, papillose-hispid above; outer calyx teeth less than 1 mm. long; ovary apically setose; style 5 mm. long; filaments 2 mm. long.—Calyx 2 mm. across, about half as wide as in the related species.

Puno: Isilluma (*Raimondi,* type).

Leandra retropila Cogn. in Mart. Fl. Bras. 14, pt. 4: 198. 1886; 690.

Branches hirsute-setulose with more or less deflexed trichomes; leaves very membranous, 5-nerved, nearly oblong, to about 1 dm. long, 3.5–5 cm. broad, rounded or obtuse at base, acuminate, sparsely asperous above, pilose-puberulent beneath; calyx tube 2.5 mm. long, the teeth about half as long; petals triangular-lanceolate, 2 mm. long; ovary glabrous.—F.M. Neg. 16970.

San Martín: Río Tocachi, *Poeppig 2044.*—Ayacucho: Estrella, *Killip & Smith 22672* (det. Gl.).—Junín: Pichis Trail, *Killip & Smith 26134* (det. Gl.). Brazil; Central America.

Leandra reversa [Ser.] Cogn. in Mart. Fl. Bras. 14, pt. 4: 198. 1886; 691. *Melastoma reversa* Ser. ex DC. Prodr. 3: 161. 1828, in syn. *Clidemia reversa* DC. l.c.

Closely allied to *L. longicoma* and to *L. retropila;* leaves 7–9-nerved, rather densely pilose beneath, rather unequal in size, 1–2.5 dm. long, 5–15 cm. broad; calyx teeth 2–3 times shorter than the tube, this to 3 mm. long; petals linear-subulate, 3–4 mm. long; ovary apically setulose. Cf. a specimen under *L. dichotoma,* perhaps referable here. F.M. Neg. 25915.

Peru (perhaps). Bolivia; Brazil.

Leandra rotundifolia Macbr., spec. nov.

Fruticosa, 6 dm. alta; ramis teretiusculis junioribus dense cum setulis valde divaricatis haud vel paullo reflexis rufo-hirsutis; petiolis dense hirsutis 2–3 cm. longis; foliis late ovatis vel fere rotundatis, basi rotundato-truncatis plerumque haud acutis, apice subabrupte breviterque acuminatis, 5–7 cm. longis, 3.5–5 cm. latis, membranaceis, minute ciliolato-denticulatis supra paullo setulosis vel glabratis, subtus mediocriter setulosis et obscure sparseque pilosis, 5–7-nerviis vel interdum subplinerviis; paniculis circa 5 cm. longis et latis, ramis secundifloris; floribus 5-meris; calyce setulis adpressis dense hirtello obscure glanduloso praecipue ad apicem, tubo campanulato, 2.5 mm. longo, segmentis exterioribus 3–4-plo brevioribus; petalis subulato-acuminatis 2.5 mm. longis; antheris vix 1.25 mm. longis; ovario 3-loculari, apice parce setuloso, stylo 4 mm. longo.—Suggests *L. retropila* Cogn. but differs in foliage, pubescence and floral character.

Loreto: Bush at Nacimiento, Río Mazán, *José M. Schunke 176,* type.

Leandra secunda Pav. ex Cogn. in Mart. Fl. Bras. 14, pt. 4: 199. 1886; 691. *Melastoma secunda* Pav. ex D. Don, Mem. Wern. Soc. 4: 308. 1823, in syn. *Clidemia secunda* D. Don, l.c.

Near *L. dichotoma* but distinguishable by the appressed and glandular pubescence of the calyx (this often obscure) and by the less pubescent leaves; inflorescence branches open and spreading in fruit, the secund flowers on each few; anthers 1–1.25 mm. long; ovary as to type 5-celled, setulose. The Loreto collections determined by Gleason, except *Williams 46; 153; 3441,* all from Río Itaya, seem referable here, at least at present.

San Martín: Tocachi, *Poeppig 2037.*—Huánuco: Pueblo Nuevo, *Ruiz & Pavón,* type.—Loreto: Near Iquitos, *Klug 1262* (det. Gl.). Santa Rosa, *Killip & Smith 28774.* La Victoria, *Williams 2554.* Pebas, *Williams 1601; 1658; 1670; 1908.* Río Nanay, *Williams 1291.*

Palta-Cocha, *Williams 1259; 1260.* Caballo-Cocha, *Williams 2080; 2207.* Pinto-Cocha, *Williams 786; 788; 797.* "Santa mullaca."

Leandra secundiflora (DC.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 195. 1886; 689. *Clidemia secundiflora* DC. Prodr. 3: 164. 1828.

Similar to *L. divaricata* but leaves sparsely hirsute with long, closely appressed trichomes above, setulose beneath, the panicles many-flowered and the flowers 4-merous; anthers only about 1 mm. long. The branches are crisp-hirsute, with the trichomes more or less spreading.—Cf. *L. secunda;* elsewhere in this family (as in *Tococa*) the same species may have 3- or 5-celled ovaries. F.M. Negs. 6424; 36243.

Lima: Near Lima, *Gay.*—Loreto: Leticia, *Ule 6205* (det. Pilger). Brazil; Panama.

Leandra solenifera [Schrank] Cogn. in Mart. Fl. Bras. 14, pt. 4: 192. *pl. 42.* 1886; 687. *Melastoma soleniferum* Schrank ex DC. Prodr. 3: 164. 1828, in syn.

Branches, petioles, peduncles and calyces densely glandular-pilose; leaves slightly emarginate at base, obliquely acuminate, unequally dentate; panicle-branches secund; flowers 6–7-merous; otherwise rather similar to *L. divaricata.*—The following, as to Field Museum specimen, is *Heterotrichum polyandrum* (Benth.) Gleason.

Loreto: Pebas, *Williams 1905* (det. Gl.).—Without locality: *Pavón.* Brazil to the Guianas.

32. CONOSTEGIA D. Don

The Peruvian species are shrubs with slender, slightly furfuraceous-pubescent branches, membranous 3-nerved or 5-plinerved leaves and ample, terminal panicles of rather small, 6–8-merous flowers. Calyx limb a closed cone or top-like, circumscissile at base in anthesis. Otherwise similar to *Miconia* but, on account of the calyx character, simulating *Calyptrella* from which it may be distinguished in flower by the unappendaged stamens.

Conostegia attenuata Triana, Trans. Linn. Soc. 28: 98. 1871; 699.

Branchlets slender, nearly terete, minutely scurfy-puberulent; petioles 5–10 mm. long; leaves narrowly lanceolate, acute at base, long-acuminate, 5–10 cm. long, 1–2 cm. wide, obscurely granulate-puberulent, 3-nerved; flowers 5-merous, few in a subcorymbose panicle, the pedicels about 1 cm. long, articulate near the middle;

hypanthium ovoid-conic, scurfy, 6–7 mm. long, 2.5–3 mm. thick; petals narrowly obovate, acute, 4–5 mm. long; anthers oblong, 2 mm. long; style filiform, 4 mm. long, the stigma capitate.—Description as to foliage applies only to the Peruvian and Ecuadorian shrub; the Colombian type was described as glabrous, branches tetragonous, leaves attenuate at both ends; the southern form may therefore be noticed as var. **peruviana** Macbr., var. nov., ramulis teretiusculis minute pulverulentis; foliis anguste lanceolatis, basi acutis, apice longe acuminatis.—The Peruvian collection being sterile, the type of the variety is *Mexia 8485*, Prov. Esmeraldas, Ecuador. F.M. Neg. 36358.

Loreto: Along the Río Nanay, *Williams 1080*. Ecuador; Colombia.

Conostegia Poeppigii Cogn. in Mart. Fl. Bras. 14, pt. 4: 211. 1887; 703.

Leaves obscurely scurfy-puberulent on the nerves beneath, oblong-ovate, acuminate, 2–3 dm. long, 7–11 cm. broad; panicles about 1 dm. long; flower-bud 6 mm. long, half as thick, glabrous, shortly and acutely acuminate; petals subtruncate, 3 mm. long.—The widely distributed *C. icosandra* (Sw.) Urban, 706 (*C. subhirsuta* DC.), has densely scurfy branchlets, flower bud subglobose, 8–9 mm. long, the flowers 8–10-merous, with petals 7–8 mm. long. F.M. Neg. 16998.

Huánuco: Pampayacu, *Poeppig*. Brazil.

33. MICONIA R. & P.

For the region comprised this group practically includes all those species with baccate or coriaceous, irregularly rupturing fruit, terminal inflorescence, this often much branched, and leaves that are rarely striolate-veined between the longitudinal nerves. Generally the petals are obtuse or retuse or rounded, the connective is little if at all produced and not appendaged, at least dorsally. For reasons of tradition or convenience a number of segregates, for which the key provides (cf. also Cogniaux, l.c. 613–614), are maintained. If a specimen does not key out to one of these offshoot groups—but sometimes the distinctions are not well-sustained—it is a *Miconia*, if the fruit is as indicated above.

Gleason has written that the "range of structure in the stamens, the calyx and the inflorescence strongly suggests that the genus, as now accepted, is a heterogeneous assemblage greatly in need of segregation." This "range of structure" is a fact but it is not clear

to me how segregation would serve the purpose of showing the probable evolution and present relationship of the species; sections under one group-name satisfy better, or at least satisfactorily, the endeavor to show the historical picture, and certainly the mechanics of the taxonomy are much simplified. Logically then, other groups now segregated could be reunited (or united) to conform with the range of structure admitted in *Miconia*. It is an error to insist that segregation necessarily serves sound taxonomy; actually the drawing of generic boundaries too finely, breaks, even if it does not in many instances lose, the lines of development for anyone except perhaps the specialist, who overlooks the fact that he himself (by much familiarity) may retain in his own mind his segregates within the larger units in which they really belong.

Technical key by sections, after Cogniaux and Gleason.

On page 360 is an artificial key to all the species. The sections are not always well marked. The number following the section name refers to the page for the key to its species.

Anthers subulate or extremely narrow and the sides parallel, dehiscent by a single minute terminal pore, the connective simple, prolonged, or sometimes even appendaged at base (*Jucunda, Tamonea, Adenodesma, Octomeris, Laceraria* are sections included here).....1. *Eumiconia* (p. 343).

Anthers somewhat or scarcely enlarged toward the truncate terminal pore, this usually as wide as the anther connective, evidently extended (rarely the anther is sterile below, the upper portion then obovate).....2. *Glossocentrum* (p. 351).

Anthers oblong, dehiscent by clefts that typically extend nearly or quite to base of cells, the short anther thus soon expanded and open on one side; connective stout, conspicuously extended but unappendaged.....3. *Chaenanthera* (p. 352).

Anthers semiellipsoid, blunt, curved on the outer sides, with 1 minute pore, the connective neither appendaged nor prolonged (*M. lasiocalyx* with 2-pored anthers).4. *Amblyarrhena* (p. 353).

Anthers obovate or cuneate, with 2–4 broad, truncate pores; filaments usually flat or geniculate.....5. *Cremanium* (p. 355).

Anthers similar to *Cremanium*, but the pore 1, this partly 2-cleft and produced anteriorly.....6. *Chaenopleura* (p. 358).

Section EUMICONIA

Note: This key and those to other sections are surely largely artificial but so also are those of Cogniaux. A natural arrangement,

as already suggested by Gleason, will probably be based at least in part on the nature of the connective and its appendages. However, these characters alone are doubtfully satisfactory, as sometimes species otherwise similar are thereby separated widely; and though the character of appendages may be constant, the degree of prolongation of the connective does not seem to be. Probably in this genus only consideration of a combination of floral and vegetative characters will result in a fairly natural alignment. Here, for convenience, the nature of the pubescence has been used more than the number of leaf nerves (this is often subject to various interpretations) as by Cogniaux.

1. EUMICONIA

Calyces oblong-cylindrical, at least by prolongation of tube, the limb often dilated, characteristically longer than broad, not or little narrowed at base, often 4 mm. long or longer, never secund; anthers often subulate, falcate, elongate, frequently 4–8 mm. long (cf. *M. calvescens*, flowers verticillate; *M. capitata*, flowers capitate).

Leaves at least shortly plinerved, sometimes only 1 nerve originating above the base, pubescent or sessile, not lepidote.

Flowers not subtended by conspicuous bracts; pubescence not extremely compact.

Leaves attenuate at base; branches appressed-strigose.

Leaves strikingly plinerved.....*M. nervosa.*

Leaves shortly plinerved.....*M. radulaefolia.*

Leaves amplexicaul or auricled at base; branches not appressed-strigose.

Leaves shortly plinerved.

Branchlets densely hispid.....*M. impetiolaris.*

Branchlets puberulent or tomentulose.

Leaves elliptic.....*M. grandifolia.*

Leaves obovate.....*M. nobilis.*

Leaves strikingly plinerved.

Calyces 5–8 mm. long.

Leaves broad, ample.....*M. amplexans*, *M. tomentosa.*

Leaves oblongish, elongate.....*M. biglandulosa.*

Calyces about 2.5 mm. long.....*M. pandurata.*

Flowers subtended by conspicuous bracts but these more or less promptly caducous; pubescence extremely compact on leaves beneath.

Leaves sessile or subsessile ..... *M. megaphylla.*

Leaves distinctly petioled.

Leaves strikingly plinerved ..... *M. pachydonta.*

Leaves shortly plinerved ..... *M. mucronata.*

Leaves basally nerved or essentially, or glabrous or petioled or lepidote-pubescent.

Bracts subtending the large flowers at least in bud, conspicuous but caducous; calyces 4–6 mm. long, pubescent.

Leaves minutely denticulate (3 doubtfully distinct species, the "differences" apparently variable).

Filaments hirsutulous; flowers often sessile.

Leaves medium size ..... *M. bubalina.*

Leaves ample ..... *M. dodecandra.*

Filaments glabrous or lightly pilose; flowers pedicellate. *M. serrulata.*

Leaves entire or essentially so.

Flowers pedicellate; connective minutely prolonged into 2 spurs ..... *M. guianensis.*

Flowers sessile; connective scarcely prolonged. *M. amazonica.*

Bracts not conspicuous, minute or wanting, the flowers small, the calyces rarely if ever more than 4 mm. long or the plants glabrous (cf. *M. Tessmannii*).

Leaves more or less pubescent but not silvery-lepidote or plinerved.

Flowers in sessile verticils arranged in a spike or spike-like panicle or panicled; leaves sessile or subsessile or linear, entire.

Leaves narrowly linear-lanceolate ..... *M. riparia.*

Leaves broad.

Leaves shortly petioled or not amplexicaul.

Leaves 3-nerved, smooth ..... *M. triplinervis.*

Leaves 5–7-nerved, bullate ..... *M. rufescens.*

Leaves amplexicaul ..... *M. amplexicaulis.*

Flowers, if more or less verticillate, borne at the ends of branchlets; leaves well-petioled or serrate.

Leaves well-petioled, entire or nearly.
Calyces ashy-tomentose, as often the leaves beneath.
Connective simple; panicle narrow.....*M. Traillii.*
Connective appendaged; panicle branched.
M. pubipetala.
Calyces glabrate or scurfy as also the leaves beneath.
Leaves glabrous above.
Panicles not at all setose.
Calyx tube pubescent.....*M. Donaeana.*
Calyx tube glabrous.....*M. vittata.*
Panicles or peduncles setose.....*M. mazanana.*
Leaves sparsely setose above.....*M. ciliaris.*
Leaves shortly petioled, coarsely serrate.....*M. mollis.*
Leaves glabrous or plinerved or the pubescence lepidote.
Leaves plinerved (cf. *M. triplinervis*).
Branches terete.
Leaves not decurrent.
Calyx scurfy.....*M. flaviflora.*
Calyx glabrous.....*M. juruensis.*
Leaves well decurrent.....*M. pteropoda.*
Branches sulcate-winged.....*M. flaccida.*
Leaves basally nerved.
Leaves glabrous; flowers 4-merous.....*M. Tessmannii.*
Leaves densely lepidote beneath; flowers 5-merous.
M. aulocalyx, M. abbreviata.

Calyces campanulate, urceolate, sometimes narrowed to base, thus obconic or turbinate, rarely a little longer than broad, often small, usually paniculate, sometimes verticillately spicate, sometimes secund; anthers various (cf. *M. flaviflora*).

Flowers sessile, in sessile or shortly peduncled verticils arranged in a spike or panicle, but not restricted to branchlet tips; pubescence never simple (cf. *M. Duckei*).

Leaves sessile.....*M. dipsacea.*

Leaves well petioled.

Leaves several times longer than broad.

Leaves stellate-puberulent beneath.....*M. Martiniana.*

Leaves scurfy on the nerves beneath.....*M. glomerata.*

Leaves 2–3 times longer than broad.

Panicle branched.

Inflorescence puberulent.

Leaves not decurrent at base.

M. calvescens, M. Urbaniana.

Leaves more or less decurrent on petioles.

M. pteropoda, M. prasina.

Inflorescence tomentose.....*M. eriocalyx.*

Panicle simple.....*M. compacta.*

Flowers if sessile not borne as above, sometimes verticillate but then at the ends of the branchlets, sometimes aggregate or even congested into a more or less capitate inflorescence or the pubescence in some part simple.

Anthers noticeably subulate, often elongate, often with a cluster of glands at the broader base, usually falcate at the narrowed tip (cf. *M. glomerata*).

Anthers more or less conspicuously glandular laterally at base, at least some of them (the episepalous).

Inflorescence about 1.5 cm. wide, raceme-like.

M. compacta.

Inflorescence pyramidal.

Calyx truncate or regularly lobed or not closed in bud by a scarious membrane.

Leaves minutely stellate all over beneath.

M. pubipetala.

Leaves scurfy on the nerves beneath or glabrate.

Leaves entire; panicles glabrate or puberulent.

Calyx campanulate, pedicellate.....*M. aurea.*

Calyx obconic, sessile or nearly.

Stems terete.....*M. juruensis.*

Stems winged.....*M. flaccida.*

Leaves undulate-denticulate; panicles scurfy.

M. glandulifera.

Calyx closed in bud, the membrane splitting into irregular lobes at anthesis.....*M. aureoides.*

Anthers all eglandular at base (but connective itself glandular in *M. Donaeana* et rel.).

Calyx closed in bud, the membrane splitting into irregular lobes; style and filaments glabrous.

Leaves plinerved.....*M. decurrens.*

Leaves basally nerved.

Petals white, 5.....*M. Duckei, M. capitata.*

Petals green, 4.....*M. Wagneri.*

Calyx regularly lobed; sometimes shallowly; style and filaments hirtellous.

Leaves sparsely setulose above, ciliate.....*M. ciliaris.*

Leaves glabrous above.

Panicles esetulose.

Calyx scurfy.....*M. Donaeana.*

Calyx tube glabrous.....*M. vittata.*

Panicles more or less setulose.....*M. mazanana.*

Anthers linear, rarely a little attenuate apically, rarely sterile below and obovately enlarged apically (division not clearly marked; cf. especially *M. compacta* and the 2 preceding species as well as those with closed calyces, and *M. juruensis*, the calyx obconic).

Flowers variously disposed in a panicle or thyrse but never secund.

Pubescence if present various, except never clearly simple in considerable part or entirely.

Leaves at least shortly plinerved or sessile or subsessile; or lightly pubescent species, the pubescence minute or scurfy, usually without sharp definition of the trichome character (cf. *M. grandiflora, M. pandurata* with large sessile leaves).

Leaves sessile or decurrent on the short petiole to the subsessile base.

Leaves clasping at base.....*M. membranacea.*

Leaves decurrent to base.....*M. glaucescens.*

Leaves distinctly petioled, even if long-decurrent.

Leaves long-attenuate at base, usually decurrent on the petiole, the free portion of the latter then shorter than the leaf-edged part.

Flowers pedicellate at least in part.

Primary branches of inflorescence simple or shortly branched.....*M. longiracemosa.*

Primary branches of inflorescence well branched.

Branches acutely angled; leaves puberulent. *M. Poeppigii.*

Branches subterete; leaves glabrous. *M. pyrifolia.*

Flowers sessile. *M. pteropoda, M. prasina, M. longiracemosa.*

Leaves rounded to acute at base, shortly if at all decurrent on the petiole.

Pubescence obvious, at least on the calyx.

Leaves slightly auricled at the rounded base. *M. Chamissois.*

Leaves not at all auriculate.

Leaves ample, mostly about 1.5 dm. long or longer..... *M. Poeppigii.*

Leaves medium, mostly about 10 cm. long or shorter.

Leaves entire.

Leaves caudate..... *M. cuspidata.*

Leaves obtusely acuminate. *M. loretensis.*

Leaves at least lightly undulate-crenulate. *M. filamentosa.*

Pubescence lacking or essentially.

Connective glandular..... *M. pauciglandulosa.*

Connective eglandular..... *M. spennerostachya.*

Leaves basally nerved, or in any case, especially if somewhat plinerved, definitely puberulent with clearly defined trichomes, never sessile (cf. *M. calvescens*).

Inflorescence coarsely scurfy or stellate, or capitate, or if merely puberulent, the trichomes distinctly reddish.

Trichomes markedly stiped, stellate-branched apically, especially on upper branchlets.

Petals glabrous; leaves hispid above. *M. barbinervis.*

Petals puberulent..... *M. stelligera, M. clavistila.*

Trichomes sessile or subsessile, sometimes barbellate-plumose, if stiped so dense that stipe is not readily obvious (cf. *M. mollis*, leaves serrate).

Pubescence ashy-fulvous.

Leaves ample, often membranous.
Calyx limb lacerate.
Petals 5, whitish ..... *M. Duckei.*
Petals 4, green ..... *M. Wagneri.*
Calyx limb lobed or truncate.
Calyx limb undulate-truncate. *M. capitata.*
Calyx limb distinctly 5-lobed.
Leaves compactly tomentulose beneath. *M. crassipes.*
Leaves minutely scurfy on nerves beneath ..... *M. zubenetana.*
Leaves small, heavy ..... *M. floccosa.*
Pubescence reddish.
Leaves shortly acuminate ..... *M. rubiginosa.*
Leaves caudately acuminate ... *M. phaeophylla.*
Inflorescence glabrous, glabrate or finely puberulent.
Branches slender; calyx 2 mm. long or shorter.
Leaves elliptic, about twice longer than broad.
Sepals regular ..... *M. eugenioides.*
Sepals irregular ..... *M. tetrasperma.*
Leaves oblong, 3–4 times longer than broad. *M. cecidophora.*
Branches stout; calyx 4 mm. long .... *M. Malatestae.*
Pubescence at least in considerable part clearly simple.
Pubescence of branches stellately branched at tip.
Calyx very pubescent ..... *M. barbinervis.*
Calyx glabrous or nearly, but densely hispid about the base ..... *M. cuneata.*
Pubescence of branches simple.
Flowers in obviously bracted clusters, the bracts ovate.
Leaves plane, basally nerved ..... *M. bracteata.*
Leaves minutely bullate, shortly plinerved. *M. radulaefolia.*
Flowers if in clusters ebracteate or obscurely, the bracts small.
Leaves evidently but minutely crenulate; calyx glabrous or glandular.

Leaves oblong-lanceolate.....*M. acreana.*

Leaves elliptic.....*M. erioclada.*

Leaves entire or essentially so.

Leaves closely bullate above.....*M. Ruizii.*

Leaves plane.

Leaves basally nerved.

Leaves longer than 1 dm., glabrous above. *M. Matthaei.*

Leaves shorter than 1 dm., often pubescent above.....*M. heteromera.*

Leaves shortly plinerved.

Calyx minutely pubescent; leaves broadly elliptic.....*M. brachybotrya.*

Calyx hirsute; leaves oblongish. *M. ibaguensis.*

Flowers secund but the branches sometimes short and the character then at least early obscure.

Principal leaf nerves 5, or if only 3, the outer pair not submarginal, but well within a faint submarginal pair.

Leaves basally nerved.

Pubescence lanate or very fine and compact or minutely stellate-scurfy.

Leaves to 3 dm. long, petioled; connective somewhat produced.

Petals glabrous; pubescence fulvous...*M. dispar.*

Petals glandular; pubescence ashy. *M. argyrophylla.*

Leaves medium, usually subsessile.

Leaves emarginate at base.....*M. albicans.*

Leaves rounded to acute at base.

Leaves acutely acuminate, acute at base. *M. serialis.*

Leaves obtuse or obtusely pointed.

Leaves softly short-lanate beneath. *M. fallax.*

Leaves compactly tomentulose beneath. *M. stenostachys.*

Pubescence lepidote.

Leaves acute at base.....*M. lepidota.*

Leaves deeply cordate, subrotund.....*M. tiliaefolia.*
Leaves plinerved.....*M. elaeagnoides.*
Principal leaf nerves 3, the outer pair submarginal, rarely also a faint marginal pair.
Leaves densely and compactly pubescent beneath.
Pubescence red-punctate lepidote.....*M. punctata.*
Pubescence compactly tomentulose....*M. pterocaulon.*
Leaves glabrate beneath.
Branchlets compressed, wing-margined.*M. scorpioides.*
Branchlets subterete.....*M. cannabina.*

2. GLOSSOCENTRUM

(Cf. also *M. dolichorrhyncha*, etc.)

Pubescence densely lepidote.
Anthers fertile to base; leaves abruptly acuminate.....*M. Klugii.*
Anthers sterile below middle; leaves gradually acuminate, opaque above.....*M. semisterilis.*
Pubescence not densely if at all lepidote, sometimes lacking.
Anthers sterile below, expanded at fertile tip.
Leaves rounded or acutish at base; petals ovate, 1 mm. long. *M. stellipilis.*
Leaves acute at base; petals elliptic, 1.5 mm. long.*M. Pilgeriana.*
Anthers fertile their entire length.
Stamens 8–10.
Petals 4; petioles 2 cm. long or longer.
Leaves basally nerved.....*M. consimilis.*
Leaves shortly plinerved.....*M. centrandra.*
Petals 5, petioles often shorter.
Petioles 3–6 (8) mm. long; stamens at least slightly dimorphic.
Leaves basally nerved, opposite.
Leaves rounded or minutely cordate at base.
Leaves minutely cordate-ovate.....*M. puberula.*
Leaves rounded at base.
Sepals scarcely 0.3 mm. long.....*M. minutiflora.*
Sepals nearly 1 mm. long.....*M. myriantha.*
Leaves obviously acute at base.

Calyx lobes broadly rounded, regular.
M. cayumbensis.

Calyx lobes 2–4, irregular, deciduous.
M. tetrasperma.

Leaves shortly plinerved.....*M. longifolia.*

Petioles all or mostly longer than 8 mm.; stamens usually isomorphic.

Leaves 2–5 (6) cm. wide, most or all of them narrower than 4 cm. and wider above the middle than below.

Leaves shortly plinerved; stamens dimorphic.
M. longifolia.

Leaves basally nerved.

Leaves verticillate, at least the upper, glabrate.
M. ternatifolia.

Leaves all opposite, scurfy beneath..*M. sclerophylla.*

Leaves all or most of them wider than 4 cm. and wider below the middle than above.

Petioles 1.5–5 cm. long; connective not simple.

Branches glabrate; connective spurred.
M. centrodesma.

Branches scurfy; connective bituberculate.
M. zubenetana.

Petioles 1–1.5 cm. long; connective spur minute or lacking.

Leaves rounded or abruptly acute at base; flowers subsessile.....*M. Martiusiana.*

Leaves narrowed at base; flowers sessile..*M. egensis.*

Stamens about 20.

Leaves shortly plinerved, green beneath.....*M. icosandra.*

Leaves basally nerved, ashy-pubescent beneath.*M. Herrerae.*

3. CHAENANTHERA

Leaves brown-silvery lepidote beneath.....*M. chrysophylla.*

Leaves granular or stellate-puberulent beneath or glabrate.

Leaves long-caudate-acuminate, stellate-puberulent beneath.
M. dolichorrhyncha.

Leaves cuspidate or shortly caudate, somewhat granular beneath.
M. Regellii.

4. AMBLYARRHENA

(Cf. also *M. Ruizii*, *M. heteromera* in *Eumiconia*)

Flowers secund (but in *M. comosa* congested) on divaricate branches; branches or leaves or both often conspicuously ciliate; style bent horizontally near tip (Section *Hartigea*).

Calyx lobed, the depressed sepals long laciniate-setose..*M. lacera.*

Calyx lobes not obvious or much shorter than the tube, entire.

Branches glabrous or ciliate with long trichomes.

Branches at first pubescent.....*M. pileata.*

Branches glabrous.....*M. ciliata.*

Branches as the leaves beneath, shortly papillose-hirtellous. *M. comosa.*

Flowers paniculate, not secund (cf. *M. comosa*, prominently bracted).

Branches glabrous or minutely scurfy apically, the leaves glabrous or glabrate.

Leaves basally nerved, obovate or cordate-ovate.

Leaves glabrous; branches subterete.

Leaves obovate or elliptic....*M. Malatestae, M. alypifolia.*

Leaves cordate-ovate.....*M. retusa.*

Leaves tomentose beneath; branches winged....*M. glutinosa.*

Leaves plinerved, often very shortly, or the leaves lanceolate.

Branches or inflorescence branches acutely or narrowly wing-angled.

Inflorescence open, ample.

Inflorescence branches wing-angled, glabrous.

Calyx terete.....*M. expansa.*

Calyx winged at base.....*M. Bailloniana.*

Inflorescence branches acutely angled, lightly scurfy. *M. Adrieni.*

Inflorescence congested.....*M. monzoniensis.*

Branches terete or somewhat angled-sulcate but bluntly, never sharply (to the touch).

Leaves completely glabrous.

Leaves 5 (4)–8 cm. wide.

Flowers 5-merous; stigma little dilated.

Leaves acuminate.....*M. Terera.*

Leaves abruptly cuspidate-acuminate....*M. Cookii.*

Flowers 4-merous; stigma subpeltate..*M. Barbeyana.*
Leaves 1.5–3 (5) cm. wide.
Filaments glandular; calyx lobes long..*M. longisepala.*
Filaments glabrous; calyx lobes short.
Flowers 6-merous; petals 2 mm. long..*M. Grayana.*
Flowers 5-merous.
Petals 2.2–3 mm. long.
Leaves gradually acuminate.....*M. pedicellata.*
Leaves abruptly acuminate.....*M. Cookii.*
Petals 1–1.5 mm. long.
Stigma clavate; pedicels 2–3.5 mm. long.
M. livida.
Stigma peltate; pedicels 0.5–2 mm. long.
M. elongata.
Leaves minutely and sparsely pubescent on the nerves.
M. Pulgari.
Branches strongly pubescent as often also the leaves beneath.
Leaves asperous above or in any case distinctly bullate.
Leaves shortly plinerved.
Leaves acuminate.....*M. hamata.*
Leaves obtusish or rounded at tip.....*M. Radula.*
Leaves basally nerved.
Leaves acuminate or acute or cuspidate.
Inflorescence pubescent.
Leaves lanceolate, glabrous or nearly.....*M. rugifolia.*
Leaves oblong-obovate or ovate-elliptic.
Leaves small..*M. centrophora, M. pseudo-centrophora.*
Leaves 1 dm. long or longer.....*M. obscura.*
Inflorescence glabrous.....*M. Lechleri.*
Leaves somewhat narrowed to apex but this itself blunt.
Leaves glabrate above.....*M. papillosa.*
Leaves densely appressed-setulose above...*M. trichrona.*
Leaves plane above, glabrous or pubescent.
Leaves small, rarely if ever 8 cm. long, nerved basally.
Leaves fleshy-coriaceous; stigma peltate.....*M. crassifolia.*
Leaves sometimes rigid but not fleshy; stigma clavate or subcapitate.

Leaves only 2–3 cm. long.....*M. aspergillaris.*

Leaves distinctly larger.

Flowers all pedicellate.....*M. chrysanthera.*

Flowers sessile or partly pedicellate.

M. centrophora, M. pseudo-centrophora.

Leaves medium, regularly about 1 dm. long or longer.

Pubescence strikingly and loosely long-hispid.

M. sanguinea.

Pubescence short or dense.

Leaves basally nerved.

Nerves 5; filaments glabrous.....*M. obscura.*

Nerves 7; filaments pilose.....*M. inamoena.*

Leaves plinerved, at least shortly.

Petioles 1–1.5 cm. long.

Leaves setulose on the nerves beneath.

M. subglabra.

Leaves puberulent beneath.....*M. vismioides.*

Petioles elongate.

Flowers subsessile, densely glomerate.

M. lasiostyla.

Flowers well-pedicellate, loosely fascicled.

M. modica.

5. **CREMANIUM** (cf. also *Chaenopleura*)

Pubescence at least in part, usually on the leaves, simple, sometimes minute, sometimes confined to the nodes of the upper branches.

Small-leaved species, the leaves characteristically ovate, rarely oblong-elliptic, in any case much shorter than 1 dm., or the branches setose at the nodes.

Flowers 7–8-merous.....*M. crocea.*

Flowers 4–5 (6)-merous.

Branches glabrous, sometimes setose at the nodes.

Nodes of the branches shaggy-setose.....*M. trichogona.*

Nodes of the branches smooth.

Pubescence on the leaves beneath very sparse or obscure in the axils.

Leaves about three times longer than broad, basally nerved.....*M. media.*

Leaves about two times longer than broad, plinerved. *M. brevis.*

Pubescence conspicuous on the leaf nerves and on the petioles.....*M. Ottikeri, M. latifolia.*

Branches more or less pubescent.....*M. laurina.*

Medium-leaved species, or in any case the leaves not ovate, especially if shorter than 1 dm.; branches never nodosely setose.

Leaves oblong-elliptic, 1.5–3 (3.5) cm. wide, 3-nerved, a marginal pair obscure if at all obvious.

Pubescence dense.

Branchlets closely scurfy-stellate.....*M. lugubris.*

Branchlets shortly plumose-hirtellous.....*M. atrofusca.*

Pubescence sparse, shortly setulose.....*M. setinervia.*

Leaves ovate-elliptic or broadly elliptic, generally 4–9 cm. wide, often 3-nerved but an additional marginal pair obvious.

Leaves petioled.

Leaves hirsute beneath; stigma peltate.

Leaves 3-nerved with a fainter pair.....*M. caerulea.*

Leaves 5-nerved with 1–2 fainter pairs...*M. cyanocarpa.*

Leaves papillose-hirtellous to glabrate beneath; stigma truncate.

Leaves sparsely and obscurely scabrous above.*M. aprica.*

Leaves densely, if shortly, setulose above.

Leaves shortly plinerved.....*M. brachyanthera.*

Leaves basally nerved.....*M. peruviana.*

Leaves sessile.....*M. opacifolia.*

Pubescence lacking or in no part obviously simple, often stellate or scurfy (incl. the merely scabrous *M. aprica*).

Pubescence lacking unless on the calyx or rarely at the nodes.

Leaves sessile, cordate.

Leaves glabrous.....*M. lilacina.*

Leaves scabrous above (to the touch).....*M. opacifolia.*

Leaves petioled.

Leaves small, 5–12 mm. long.

Leaves obovate; flowers 5-merous.....*M. buxifolia.*
Leaves ovate; flowers 4-merous.....*M. vaccinioides.*
Leaves much larger.
Leaves fleshy, closely and transversely striate-veined.
M. calophylla.
Leaves merely coriaceous, not striately veined.
Anthers 2-pored.
Petioles short, few if any as long as 2 cm.; small or medium-leaved species.
Branchlets terete or bluntly quadrate.
Stigma evidently peltate.
Leaves ovate-oblong, 5–8 cm. long.
Leaves thin; petals minute.....*M. rubens.*
Leaves firm; petals 1.5–2 mm. long.*M. media.*
Leaves oblong-lanceolate, longer.*M. glaberrima.*
Stigma obtuse or minutely capitate.
Style obsolete; leaves oblong-lanceolate.
M. brevistylis.
Style obvious; leaves ovate-elliptic.
M. galactantha.
Branchlets conspicuously and acutely angled or winged.....*M. densifolia.*
Petioles at least in part longer than 2 cm., or in any case the leaves considerably longer than 1 dm.
Branches acutely sulcate.....*M. sulcata.*
Branches terete or obtusely quadrate.
Leaves attenuate at base or at least acute.
Stigma obtuse; leaves thin.....*M. clathrantha.*
Stigma peltate; leaves rather firm.
Leaves 4–5 cm. wide.....*M. cremophylla.*
Leaves 6–11 cm. wide.....*M. coelestis.*
Leaves cordate at base.....*M. Weberbaueri.*
Anthers 4-pored.....*M. theaezans.*
Pubescence obvious, at least on the younger parts.
Leaves oblong-linear or narrowly lanceolate, about five times longer than broad.
Flowers 4-merous; leaves 2–3.5 cm. long.....*M. salicifolia.*
Flowers 5-merous; leaves 3.5–11 cm. long.....*M. neriifolia.*

Leaves much broader in proportion to length.
Leaves small to medium, not much longer than 1 dm., often shorter.
Leaves verticillate, sessile or subsessile.....*M. quadrifolia.*
Leaves opposite, petioled.
Stigma peltate or capitellate; flowers often distinctly pedicellate.
Leaves obovate or oblong-elliptic, acute or obtuse.
Leaves about 3 cm. wide or wider...*M. polyneuron.*
Leaves about 2 cm. wide or narrower.
M. crassistigma, M. dumetosa.
Leaves rounded-ovate, obtuse.....*M. Miles-Morgani.*
Style enlarged apically, the stigma obtuse; flowers sessile or subsessile.
Leaves not at all scabrous above.
Leaves glabrate.....*M. galactantha.*
Leaves compactly tomentulose beneath....*M. Tiri.*
Leaves scabrous above.....*M. aprica.*
Leaves ample, mostly or all considerably longer than 1 dm.
Leaves rotund-cordate.....*M. vitiflora.*
Leaves oblong-elliptic.
Calyx about 2 mm. long or shorter.
Flowers glomerate.....*M. pulverulenta.*
Flowers not distinctly glomerate.
Pubescence reddish-plumose.....*M. hygrophila.*
Pubescence cinereous, stellate or nearly lacking.
Leaves 6–11 cm. wide.
Leaves 3-nerved.....*M. coelestis.*
Leaves plinerved.....*M. saxatilis.*
Leaves 3–5 cm. wide.....*M. cremophylla.*
Calyx 2.5–3 mm. long.
Leaves brown granulose-stellate beneath.*M. granulosa.*
Leaves reddish scurfy beneath.....*M. Pavoniana.*

6. CHAENOPLEURA

Pubescent shrubs with subrotund leaves, or at least many of the leaves less than twice as long as broad.

Pubescence in part simple or nearly lacking.
Low, prostrate-ascending shrubs, the branches short.
Leaves suborbicular.....*M. rotundifolia.*
Leaves much longer than broad.....*M. chionophila.*
Erect or suberect, the panicles elongate.
Leaves strongly bullate above, pilose beneath....*M. bullata.*
Leaves merely with impressed veins above, glabrate beneath.
M. trichocaula.
Pubescence scurfy-stellate.
Leaves to 2 cm. long.....*M. grisea.*
Leaves about 5 cm. long.....*M. Miles-Morgani.*
Glabrous or usually lightly pubescent shrubs, or in any case the leaves distinctly longer than broad, if pubescent.
Panicles narrow, thyrsiform, the pedicels, at least in part, more or less nodding.
Leaves shortly plinerved.....*M. integrifolia.*
Leaves basally nerved.
Leaves less than twice longer than broad.....*M. nitida.*
Leaves at least twice as long as broad, at least most of them.
Branches densely hirsute-setose.....*M. Griffisii.*
Branches glabrous or scattered-setulose.
Branches quadrate, often acutely; flowers many.
M. alpina, M. andina.
Branches terete or nearly; flowers few.
Leaves entire; branches scurfy.....*M. thyrsoidea.*
Leaves setose-serrulate or crenate; branches glabrous.
Leaves sharply acuminate.....*M. fruticulosa.*
Leaves obtuse.....*M. cauingia.*
Panicles pyramidal, the pedicels rigid, erect or spreading.
Leaves petioled.
Branchlets sharply sulcate, at least the upper.
Leaves glabrous.....*M. corymbiformis.*
Leaves densely pubescent beneath.....*M. firma.*
Branchlets terete.
Leaves ovate-cordate.....*M. secundifolia.*
Leaves oblong-lanceolate.....*M. nigricans.*
Leaves sessile.....*M. retusa.*

Artificial key to Miconia

Leaves definitely bicolor, that is, the upper surface glabrous (or essentially), the lower densely pubescent, or if not, or in any case, the flowers secund or in sessile verticils at intervals on one elongate axis. Contrast, 364.

Pubescence on the leaves beneath obviously lepidote or lepidote-stellate.

Flowers ternate, glomerulate or spicate, not secund.

Inflorescence or its few branches simple or little branched. *M. aulocalyx*, *M. abbreviata*.

Inflorescence branches much-branched..... *M. Klugii*.

Flowers secund, the inflorescence branches sometimes short.

Leaves acute at base or in any case not cordate.

Leaves shortly plinerved, silvery beneath; branchlets acutely angled..... *M. elaeagnoides*.

Leaves basally nerved, the trichomes more or less colored.

Leaves oblong-lanceolate, at least about three times longer than broad.

Uppermost leaves verticillate; anthers opening by slits..... *M. chrysophylla*.

Uppermost leaves opposite; anthers opening by a pore. *M. punctata*.

Leaves usually elliptic, typically scarcely or rarely three times longer than broad.

Nerves of leaves basal; anthers linear, fertile to base. *M. lepidota*.

Nerves of leaves partly arising just above base; anthers obovate above, sterile below..... *M. semisterilis*.

Leaves cordate at base..... *M. tiliaefolia*.

Pubescence on the leaves beneath not definitely lepidote, sometimes lepidote-stellate but then the stellate character the more obvious, sometimes an extremely compact indument, the character of the trichomes not marked, sometimes merely punctate, sometimes lacking.

Calyces oblong, limb often dilated, usually about 5 mm. long, bracted but the bracts caducous, not borne secundly.

Leaves strikingly plinerved.

Leaves sessile or subsessile, the short petiole if developed nearly concealed by the leaf base.

Pubescence on the leaves beneath obviously stellate.

Leaves about half as long as broad; style pubescent. *M. amplexans, M. tomentosa.*

Leaves about a third as broad as long; style glabrous. *M. biglandulosa.*

Pubescence on the leaves beneath compactly tomentulose. *M. megaphylla.*

Leaves obviously petioled..... *M. pachydonta.*

Leaves basally nerved or merely shortly plinerved.

Leaves usually less than twice longer than broad, entire or merely calloused denticulate.

Leaves broadly ovate or subrotund, distinctly cordate at base..... *M. amazonica.*

Leaves acute, rounded or merely emarginate at base.

Flowers pedicellate, not obviously bracted. *M. pubipetala.*

Flowers sessile, early bracted.

Leaves firm; petals 7–9 mm. long.... *M. mucronata.*

Leaves membranous; petals 5 mm. long. *M. Traillii.*

Leaves mostly at least twice longer than broad, rather oblong, often not entire.

Calyx glabrate or glabrous..... *M. guianensis.*

Calyx permanently tomentose.

Style glabrous below..... *M. dodecandra.*

Style pilose below.

Principal leaf nerves 3..... *M. bubalina.*

Principal leaf nerves 5..... *M. serrulata.*

Calyces campanulate, usually much shorter than 5 mm. or borne secundly.

Flowers secund but the branches sometimes short.

Leaves not strikingly ciliate nor flowers ciliate-bracted.

Pubescence on the leaves beneath minutely stellate or sparse and obscure.

Petioles elongate..... *M. dispar.*

Petioles short or nearly lacking.

Leaves 5–9 cm. wide; branchlets compressed. *M. scorpioides.*

Leaves rarely wider than 4 cm.; branchlets grooved. *M. cannabina.*

Pubescence on the leaves beneath lanate or extremely compact, the trichomes not defined.

Leaves only 3-nerved, the outer pair submarginal; branches 4-winged ..... *M. pterocaulon.*

Leaves with only 3 principal nerves, but also with a faint marginal pair.

Leaves minutely but distinctly emarginate-cordate at base ..... *M. albicans.*

Leaves acute to rounded at base.

Leaves barely acute apically; anther connective obscurely if at all produced.

Leaves more or less distinctly petioled. *M. stenostachya.*

Leaves all or many of them subsessile. *M. fallax.*

Leaves acutely acuminate; anther connective basally produced.

Branchlets acutely 4-sided; pubescence ashy or sordid ..... *M. argyrophylla.*

Branchlets subterete; pubescence fulvous. *M. serialis.*

Leaves strikingly ciliate or at least the flowers ciliate-bracted.

Branches glabrous or ciliate with long trichomes.

Calyx lobed, the depressed sepals long laciniate-setose. *M. lacera.*

Calyx lobes not obvious or much shorter than the tube, entire.

Branches at first pubescent ..... *M. pileata.*

Branches glabrous ..... *M. ciliata.*

Branches, as the leaves beneath, shortly papillose-hirtellous ..... *M. comosa.*

Flowers not secund.

Leaves sessile or nearly.

Flowers sessile in verticils that are spicately arranged on an elongate axis.

Leaves basally nerved ..... *M. triplinervis.*

Leaves plinerved ..... *M. nervosa.*

Flowers paniculate.

Leaves nearly oblong.....*M. falcata, M. dipsacea.*

Leaves obovate.....*M. nobilis.*

Leaves well-petioled.

Leaves large, plinerved, nearly oblong...*M. Martiniana.*

Leaves medium, usually 10–15 cm. long, sometimes small.

Leaves minutely auriculate-cordate or subcordate.

Leaves 3-nerved.....*M. crassipes.*

Leaves 5-plinerved.....*M. Martiniana.*

Leaves rounded or acute at base.

Leaves about a third longer than broad; pubescence obviously reddish; anthers slender.

Leaves obtusely caudate.....*M. phaeophylla.*

Leaves acutely or shortly acuminate.
M. rubiginosa.

Leaves distinctly more than a third longer than broad; pubescence fulvous-stellate or scurfy, rarely rufescent; anthers short, cuneiform except *M. Herrerae, M. sclerophylla.*

Leaves shortly plinerved, long acuminate.
M. vismioides.

Leaves basally nerved, acute, obtusely acuminate or rounded at tip.

Leaves oblong or nearly, 1–3.5 (5) cm. wide.

Leaves firm or coriaceous but fragile, oblong-elliptic; petioles 1 cm. long or longer.

Leaves acute, firm, ashy-pubescent beneath.
M. Tiri.

Leaves acuminate, fragile, brown or rufescent beneath.

Pubescence reddish; anthers linear.
M. sclerophylla.

Pubescence bright brown; anthers broad.
M. granulosa.

Leaves heavy coriaceous; petioles often shorter than 1 cm.

Flowers 5-merous; leaves 3.5–11 cm. long.

Leaves obtusish; calyx lobed, subsessile.
M. neriifolia.

Leaves acuminate or acute; calyx obscurely lobed, sessile. . *M. floccosa.*

Flowers 4-merous; leaves 2–3.5 cm. long. *M. salicifolia.*

Leaves elliptic or obovate, mostly 4 cm. wide or wider.

Branches obtusely or acutely angled or compressed.

Pubescence stellate.

Stamens 10; stigma clavate. *M. Pavoniana.*

Stamens 20; stigma capitate. *M. Herrerae.*

Pubescence on leaves beneath hirsute. *M. firma.*

Branches wing-angled. . . . . *M. glutinosa.*

Leaves often not exactly concolor but not bicolor as above, that is, the surfaces not in contrast by virtue of the pubescence or the lack of it; flowers never secund.

Pubescence in some part simple, never entirely lacking, present at least in leaf-nerve axils and on petioles, often with more or less branched or stellate pubescence intermixed, this sometimes dominate, usually not; simple pubescence rarely minute or only a few trichomes in the inflorescence (cf. *M. impetiolaris*, *M. rufescens*, the trichomes actually pseudo-simple). This division does not include scurfy species rarely with 1-several simple trichomes in the inflorescence. Cf. 368.

Leaves uniformly pubescent at least on one side, the trichomes there usually simple, not confined to the nerves and veins but the leaves sometimes merely scabrous above, the pubescence sometimes sparse, minute or lacking on one or even both surfaces.

Inflorescence simple or nearly, spiciform (rarely lower verticils on short branches).

Leaves strikingly plinerved. . . . . *M. nervosa.*

Leaves shortly plinerved or scarcely. . . . . *M. radulaefolia.*

Inflorescence more or less branched.

Leaves glabrous above in age.

Petioles 1–2 cm. long. . . . . *M. Matthaei.*

Petioles all or most of them shorter than 1 cm.

Pubescence mostly simple.....*M. ibaguensis.*

Pubescence mostly scurfy-stellate....*M. chrysanthera.*

Leaves pubescent above, sometimes merely scabrous.

Pubescence of the branches spreading, rather loose, fine or soft, sometimes glandular.

Trichomes, at least many of them, stiped-stellate.

Calyx glabrous or sparsely setulose.....*M. cuneata.*

Calyx densely setulose.....*M. barbinervis.*

Trichomes simple.

Flowers well-pediceled.....*M. sanguinea.*

Flowers sessile, glomerulate.

Flowers minute, many, the calyx about 1.5 mm. long.

Branchlets terete; petioles often elongate.

Branchlets hirsute.....*M. cyanocarpa.*

Branchlets substrigose.....*M. brachyanthera.*

Branchlets angled or lightly sulcate; petioles about 1 cm. long.....*M. caerulea.*

Flowers medium, the calyx about 3 mm. long.

Petioles to 2 cm. long; branchlets long-pubescent.....*M. erioclada.*

Petioles to 1 cm. long; branchlets rather shortly hirsute.....*M. ibaguensis.*

Pubescence of the branches crisped, strigose or more or less appressed, often tomentulose or coarse, sometimes lacking or nearly, if spreading very short.

Principal leaf nerves 3, and 1 pair fainter submarginal ones.

Leaves sessile.....*M. opacifolia.*

Leaves petioled.

Leaves sparsely scurfy-stellate or hirtellous beneath, ovate-elliptic.

Leaves sparsely scabrous above.....*M. aprica.*

Leaves setulose above.....*M. peruviana.*

Leaves densely pubescent beneath, oblong.

Upper leaf surface distinctly bullate, lower foveolate.....*M. lugubris.*

Upper leaf surface setulose but not bullate. *M. caelata, M. atrofusca.*

Principal leaf nerves 3–7, if only 3 equally strong, there are then 2 pairs of fainter submarginal ones.

Nerves all basal.

Leaf surface smooth, sparsely setulose or glabrous above.

Leaves sparsely setulose above, serrulate. *M. inamoena.*

Leaves glabrous above, entire. . *M. brachybotrya.*

Leaf surface bullate, sometimes minutely.

Leaves sparsely setulose above; petioles elongate..... *M. papillosa.*

Leaves densely setose or strigose above; petioles short (rarely 2–3 cm. long).

Leaves rounded at base, 7-nerved.

Minutely bullate upper leaf surface concealed by pubescence..... *M. Ruizii.*

Coarsely bullate upper leaf surface conspicuous..... *M. trichrona.*

Leaves cordate at base, 9-nerved. *M. Lechleri.*

Nerves in part arising shortly above leaf base.

Calyx pubescent.

Leaves densely pubescent beneath.

Leaves villous beneath; calyx 2 mm. long. *M. hamata.*

Leaves setulose beneath; calyx 4 mm. long. *M. Radula.*

Leaves sparsely and minutely pubescent on both sides..... *M. lasiocalyx.*

Calyx tube glabrous..... *M. brachyanthera.*

Leaves more or less pubescent marginally or beneath but at least chiefly only on the nerves or transverse veins or in the nerve axils; in any case the pubescence not uniformly distributed over the leaf surface or on the veinlets, rarely mostly marginal (cf. *M. brachybotrya, M. brachyanthera*).

Leaves subrotund, 1–1.5 cm. wide.

Branches conspicuously setulose and scurfy; leaves glabrous above, the veins impressed..... *M. trichocaula.*

Branches merely or chiefly scurfy; leaves setulose or strongly bullate.

Leaves smooth but sparsely setulose above. *M. chionophila, M. rotundifolia.*

Leaves strongly bullate but glabrous above. . *M. bullata.*

Leaves distinctly longer than broad.

Nodes at least in panicle setose, the branches (below at least) glabrous or puberulent.

Leaves ample.

Leaves cordate. . . . . *M. Weberbaueri.*

Leaves rounded or subacute at base. . . . *M. mazanana.*

Leaves about 1 dm. long or smaller.

Nodes shaggy-setose. . . . . *M. trichogona.*

Nodes sparsely setulose. . . . . *M. andina.*

Nodes glabrous or pubescent like the stems.

Leaves oblong-lanceolate, at least many more than three times longer than broad (*M. comosa,* with ciliate bracts, might be sought here).

Leaves densely bullate-roughened above. . *M. rugifolia.*

Leaves smooth above or the veins merely impressed.

Panicle not racemiform.

Calyces densely pubescent. . . . . *M. subglabra.*

Calyces glabrous or obscurely puberulent.

Leaves rugose beneath by the many transverse nerves. . . . . *M. setinervia.*

Leaves smooth or in any case the veins few.

Branchlets densely villous to glabrate; leaves acuminate.

Branchlets villous; leaf nerves basal. *M. acreana.*

Branchlets glabrate; leaves shortly plinerved. . . . . *M. Pulgari.*

Branchlets long setose-hirsute; leaves obtusish. . . . . *M. setulosa.*

Panicle racemiform. . . . . *M. heteromera.*

Leaves ovate-oblong to elliptic, two to three, mostly about two, times longer than broad.

Flowers 7–8-merous. . . . . *M. crocea.*

Flowers 4–5 (6)-merous.

Flowers 5–6-merous.

Branchlets pilose- or setulose-scurfy or scurfy-stellate.

Pubescence mostly scurfy-stellate. *M. centrophora, M. chrysanthera.*

Pubescence simple..... *M. laurina.*

Branchlets glabrous or sparsely or long-setulose.

Setae few, scattered or lacking..... *M. media.*

Setae abundant..... *M. setulosa.*

Flowers 4-merous.

Branches densely but shortly hispid-setose. *M. Griffisii.*

Branches glabrous or glabrate, the branchlets sometimes obscurely pilose or sparsely setulose, rarely tomentose.

Leaves pilose on veins beneath; anthers truncate..... *M. latifolia.*

Leaves glabrous beneath or pubescent on nerves or in nerve axils.

Leaves shortly plinerved, entire. *M. integrifolia.*

Leaves basally nerved. *M. andina, M. Ottikeri, M. alpina.*

Pubescence in no part simple, sometimes entirely wanting, often a sparse and scurfy puberulence, often conspicuously stellate or branched (generally merely scabrous species have been included in the above division with simple trichomes).

Leaves sessile or subsessile, the short petiole, if obvious, more or less concealed by the leaf base.

Leaves more or less stellate pubescent above, sometimes glabrate in age.

Leaves subentire, the surface bullate..... *M. rufescens.*

Leaves coarsely toothed, the surface nearly plane. *M. mollis.*

Leaves glabrous above, at least at maturity, unless the midnerve, or merely scabrous.

Leaves glabrous beneath or merely minutely puberulent or lepidote-punctate at maturity.

Leaves narrowed and not clasping at base, this rarely auricled.

Verticils of flowers arranged in a spike...*M. triplinervis.*

Verticils of flowers panicled.....*M. glaucescens.*

Leaves even if narrowed below, sessile, clasping at base.

Leaves basally nerved or obscurely plinerved.

Leaves narrowed at base.....*M. membranacea.*

Leaves cordate at base.

Leaves 7–17 cm. long.

Leaves thin, scabrous above.....*M. opacifolia.*

Leaves coriaceous, glabrous.....*M. lilacina.*

Leaves 3–6 cm. long.....*M. retusa.*

Leaves distinctly plinerved, the upper nerves arising 1 to several cm. above the leaf base.

Leaves strongly pandurate.....*M. pandurata.*

Leaves not at all pandurate.....*M. grandifolia.*

Leaves obviously if sometimes finely, sparsely or compactly pubescent beneath, the pubescence if scurfy sometimes confined to the nerves.

Leaves small, verticillate.....*M. quadrifolia.*

Leaves ample, opposite.

Branches densely hirsute with barbellate trichomes. *M. impetiolaris.*

Branches scurfy-puberulent or tomentulose.

Pubescence of leaves beneath a compact indument. *M. megaphylla.*

Pubescence of leaves beneath scurfy-stellate.

Calyces 2–3.5 mm. long, usually companulate-turbinate.

Calyces pubescent; leaves long-oblong. *M. falcata, M. dipsacea.*

Calyces soon glabrous; leaves obovate or elliptic.

Leaves obovate, tapering to base..*M. nobilis.*

Leaves ovate-elliptic.....*M. amplexicaulis.*

Calyces about 5 mm. long, oblong-cylindric.

Style and filaments glabrous...*M. biglandulosa.*

Style and filaments somewhat pubescent.
M. amplexans.

Leaves petioled, sometimes shortly but the petiole obvious, the leaf base usually merely rounded to acute or decurrent.

Small-leaved species, the leaves, at least many of them, only about 8 cm. long, usually much shorter or less than 1 cm. wide. Contrast, 373.

Panicles and branchlets definitely pubescent or puberulent.

Leaves mostly 2–3 (4) cm. long.

Flowers nodding, well-pediceled.....*M. grisea.*

Flowers sessile or nearly, crowded.

Leaves early densely stellate-scurfy beneath; petals 2 mm. long.....*M. aspergillaris.*

Leaves lightly scurfy beneath; petals about 0.5 mm. long.....*M. dumetosa.*

Leaves mostly 4–8 cm. long.

Leaves more or less caudately or long-acuminate, if the latter, linear-oblong.

Leaves linear-oblong.....*M. riparia.*

Leaves ovate to elliptic, more or less conspicuously caudate.

Anthers laterally dehiscent; leaves shortly caudate.
M. Regelii.

Anthers terminally dehiscent.

Leaves minutely cordate at base...*M. puberula.*

Leaves acutish at base.

Calyx glabrate or glabrous.

Calyx 2.5–3 mm. long; petioles slender, 7–11 mm. long.....*M. heteromera.*

Calyx about 1.5 mm. long; petioles stouter, shorter.....*M. minutiflora.*

Calyx fulvous puberulent.....*M. cuspidata.*

Leaves obtuse, acute or very shortly acuminate, always broader than oblong-linear.

Leaves oblong-lanceolate or oblong-obovate, 1.5–2 (2.5) cm. wide.

Petioles 1 cm. long or longer; flowers minute.
M. crassistigma.

Petioles 4–7 mm. long; petals 2 mm. long.
M. nigricans.

Leaves ovate-elliptic, rounded to an acutish or cordate base, (2) 2.5–4 cm. wide.

Leaves not heavy-coriaceous.

Leaves truncate-cordulate at base.

Calyx glabrate; leaf nerves basal.
M. Miles-Morgani.

Calyx scurfy; leaves shortly plinerved.
M. secundifolia.

Leaves acutish or merely rounded at base; calyx at least sparsely stellate-pubescent.

Leaves smooth (or nearly) above, even in age.

Flowers on pedicels 1–2 mm. long.
M. chrysanthera.

Flowers sessile or subsessile.

Anthers open at tip; stigma capitate.
M. centrophora.

Anthers open on the side; stigma clavate.
M. Regelii.

Leaves bullate above, foveolate beneath.
M. pseudocentrophora.

Leaves exceptionally heavy-coriaceous.
M. crassifolia.

Panicles and branchlets glabrous or nearly, the pubescence if present evanescent or very sparse.

Leaves 3.5 cm. long or longer.

Branches acutely angled or winged.

Leaves tomentose beneath.....*M. glutinosa.*

Leaves glabrous beneath.

Leaves narrowly oblong, 2.5 (3) cm. wide or narrower.

Leaves 3-nerved, the one pair submarginal.
M. densifolia.

Leaves 3-nerved with also a faint submarginal pair.....*M. andina, M. alpina.*

Leaves obovate to elliptic, 3 (2.5) cm. wide or wider.

Panicles open, ample.....*M. expansa.*

Panicles dense.....*M. monzoniensis.*

Branches terete or bluntly quadrate.

Leaves about three times longer than broad, minutely denticulate at least toward tip, rarely entire (the oblong-lanceolate glabrous *M. livida* and *M. Grayana* might be sought here).

Leaves usually ciliate-serrulate; pubescence often early scurfy; calyx minute.

Leaves acute or acuminate.

Leaves firm, scurfy on midnerve.

Flowers all pedicellate; petals 1.5 mm. long.....*M. polyneura.*

Flowers sessile or nearly; petals scarcely 1 mm. long.....*M. galactantha.*

Leaves thin, glabrous.....*M. rubens.*

Leaves caudate.....*M. minutiflora.*

Leaves calloused-dentate or spinulose-serrulate or entire; pubescence lacking or not scurfy; calyx 2.5–4 mm. long.

Leaves sharply or even spinulose-serrulate; flowers 4-merous.

Calyx turbinate, narrowed to base. *M. fruticulosa.*

Calyx campanulate, rounded at base. *M. andina.*

Leaves calloused-denticulate, rarely some of them entire; flowers 5-merous...*M. media.*

Leaves about twice longer than broad, remotely or obscurely, bluntly or crenately toothed.

Leaves shortly plinerved; flowers numerous. *M. brevis.*

Leaves basally nerved; flowers few.*M. thyrsoidea.*

Leaves 3 cm. long or shorter.

Leaves rounded at apex, entire.

Leaves obovate or oblanceolate.

Leaves 5–8 mm. broad.....*M. buxifolia.*

Leaves 10–18 mm. broad.....*M. alypifolia.*

Leaves oblong-elliptic.....*M. vaccinioides.*

Leaves ovate, narrowed to obtuse apex, obscurely crenate.....*M. cauingia.*

Medium to large-leaved species, the leaves, at least most of them, 9 cm. long to much longer (*M. pachydonta* and *M. Regelii* might be sought here).

Pubescence obvious, at least on some part, this usually the panicle, and, if even only minutely scurfy, uniformly spread where occurring or conspicuous, not early deciduous, often permanent (see also some specimens of *M. nobilis*, *M. dipsacea*). Contrast, 377.

Large-flowered species, the petals 4–6 mm. long, sometimes exserted from the calyx only about 2 mm.

Flowers ternate or in any case subsessile.

Leaves conspicuously toothed.....*M. mollis.*

Leaves entire or essentially.

Leaves acute at base.....*M. aureoides.*

Leaves rounded at base.

Minutely pubescent species.

Calyx tube glabrous.....*M. vittata.*

Calyx tube densely tomentulose.

M. Donaeana.

Conspicuously pubescent species..*M. rufescens.*

Flowers obviously pedicellate, at least in part.

Petals glabrous or nearly; anthers eglandular.

M. ciliaris.

Petals puberulent; anthers or filaments glandular.

Leaves more or less repand-crenulate.

M. glandulifera, *M. muricata.*

Leaves entire or remotely calloused.

Leaves glabrate; anthers subulate...*M. aurea.*

Leaves stellate beneath; anthers blunt.

M. modica.

Small-flowered species, the petals rarely about 3 mm. long.

Leaves cordate to rounded at base, sometimes narrowed toward the base but base itself cordate-rounded or obtuse, never decurrent, and in any case the pubescence marked, at least in the inflorescence.

Leaves more or less cordate at base, sometimes minutely but definitely.

Pubescence in inflorescence a fine ashy puberulence; anthers linear-subulate, conspicuous. *M. calvescens.*

Pubescence and anthers not concomitantly as above.

Inflorescence thickly lanate with ashy trichomes. *M. eriocalyx.*

Inflorescence variously pubescent with rusty trichomes.

Leaves at the least three times longer than broad.....*M. Martiniana, M. glomerata.*

Leaves about twice longer than broad.

Leaves strikingly plinerved..*M. lasiostyla.*

Leaves basally nerved or only shortly plinerved.

Pubescence in part lanate with barbate trichomes; calyces pedicellate. *M. vitiflora.*

Pubescence not lanate.

Calyces sessile, glomerate.

Flower verticils spicately arranged. *M. pulverulenta.*

Flower verticils terminal on the branchlets of the open or congested inflorescence. *M. Duckei, M. Wagneri.*

Calyces pediceled.....*M. secundifolia.*

Leaves merely rounded or obtuse (rarely acutish) at the base (exceptional specimens of the big-leaved *M. calvescens* might be sought here).

Panicle narrow, subcapitate or racemiform.

Panicle racemiform.....*M. compacta.*

Panicle compact.....*M. Duckei, M. capitata.*

Panicle more or less branched.

Pubescence on branchlets distinctly stiped-stellate, or calyx lacerately lobed.

Calyx regularly lobed; stiped-stellate trichomes conspicuous.

Leaves glabrous above.....*M. clavistyla.*

Leaves sparsely stiped-stellate above.
M. stelligera.

Calyx irregular; stiped-stellate trichomes short.
M. Duckei.

Pubescence on branchlets compact, scurfy and not, at least obviously, stiped-stellate.

Flowers almost minute, the calyx only 1–2 mm. long.

Leaves more or less conspicuously caudate, entire.

Caudation greatly prolonged; pubescence loose.....*M. dolichorrhyncha.*

Caudation short; pubescence minute.
M. stellipilis.

Leaves acute or acuminate or if a little caudate, not entire.

Flowers densely glomerulate.
M. pulverulenta.

Flowers ternate or few or not in separated glomerules.

Leaves entire.

Leaves firm, the trichomes barbellate.....*M. hygrophila.*

Leaves medium, the trichomes stellulate.....*M. saxatilis.*

Leaves denticulate-crenulate.
M. zubenetana.

Flowers medium, the calyx 2.5–3 mm. long.

Pubescence gray.

Leaves 3–4 cm. wide.....*M. Tiri.*

Leaves mostly 4–8 cm. wide.*M. Herrerae.*

Pubescence bright brown...*M. granulosa.*

Leaves more or less decurrent on the petiole, even if rounded to base at least minutely decurrent, in any case not markedly pubescent, rarely evanescently along the principal nerves, sometimes densely pubescent in the inflorescence.

Leaves long-decurrent (even to base) on the thereby winged petiole, plinerved.

Leaves glabrous; calyx irregularly lacerate.

M. decurrens.

Leaves obscurely puberulent on the nerves beneath; calyx minutely toothed.

Vein areoles more than 1 mm. wide, oblongish.

M. pteropoda.

Vein areoles 0.3 mm. wide, mostly 5–6-sided.

M. longiracemosa.

Leaves decurrent only at tip of petiole.

Leaves always drying black, often caudate.

Petals subacute; calyx opening irregularly; puberulence extremely fine, dense.

M. tetrasperma.

Petals obtuse; calyx regularly toothed; puberulence uneven or coarser.

Leaves about twice longer than broad.

Leaves to 12 cm. long....*M. Martiusiana.*

Leaves to 2.5 dm. long.

M. egensis, M. Chamissois.

Leaves about three times longer than broad.

Leaves 2–3 cm. wide; calyx about 3 mm. long.....*M. cuspidata.*

Leaves (or some of them) 4–8 cm. wide; calyx 1.5–2 mm. long.

Leaves shortly plinerved; anthers terete.

M. Poeppigii.

Leaves basally nerved.

Anthers obovate above.*M. Pilgeriana.*

Anthers slender throughout.

M. minutiflora.

Leaves always drying brownish-green or yellowish, usually only acuminate or obtuse (cf. *M. Chamissois*).

Leaves basally nerved.

Leaves in part ternate; flowers minute.

M. ternatifolia.

Leaves all opposite; flowers medium.

M. cayumbensis.

Leaves shortly plinerved.

Leaves distinctly crenate-serrulate.

M. filamentosa.

Leaves entire or essentially.

Pubescence a puberulence; calyx open.

M. flaviflora, M. acuminifera.

Pubescence scurfy; calyx closed in bud.

M. aureoides.

Pubescence lacking or evanescent (calyx only sometimes scurfy) or merely a sparse pulverulence even on the leaf nerves beneath, the upper branches and panicles (some species, variable in pubescence, are repeated under the contrast, except *M. minutiflora* and *M. ternatifolia*, the latter with ternate leaves).

Calyx 2–3.5 mm. long or longer, campanulate; anthers short, blunt; branchlets and peduncles usually stout, often sulcate or angled.

Branches obtusely quadrate or sulcate.

Leaves mostly 5–8 cm. wide, acute or shortly acuminate.

Petioles stout, short.....*M. Malatestae.*

Petioles slender, elongate.

Calyx obscurely pulverulent, the lobes acute.

Inflorescence peduncled, leafy, the leaves acuminate.....*M. Adrieni.*

Inflorescence sessile; leaves cuspidately acuminate.....*M. Cookii.*

Calyx glabrous, the lobes obtuse....*M. Terera.*

Leaves small, 2–3 (4.5) cm. wide, long-acuminate or caudate.

Filaments glandular; calyx lobes and tube subequal.....*M. longisepala.*

Filaments glabrous; calyx lobes short.

Petals 3 mm. long.....*M. pedicellata.*

Petals 1–1.5 mm. long.

Stigma clavate.....*M. livida.*

Stigma peltate.....*M. Grayana, M. elongata.*

Branches, or at least inflorescence branchlets, acutely or wing-angled.

Panicles ample, open.

Leaves glandular-ciliate.....*M. expansa.*

Leaves minutely setose-serrulate..*M. Bailloniana.*

Panicles congested.

Flowers sessile or subsessile.....*M. monzoniensis.*

Flowers well-pediceled.....*M. corymbiformis.*

Calyx minute or sometimes 2–3 mm. long, rarely longer and often constricted, at least not campanulate or the anthers narrowed and not blunt; branchlets usually slender, sometimes compressed or bluntly angled.

Leaves shortly plinerved (cf. also *M. theaezans* with 4-pored anthers).

Calyx minute or small, campanulate or subglobose, 1–2.5 (3) mm. long, never densely scurfy.

Flowers 4-merous; anthers obovate.

Leaves ciliate.....*M. centrandra.*

Leaves eciliate.....*M. Barbeyana.*

Flowers 5-merous; anthers narrow.

Stamens about 20.....*M. icosandra.*

Stamens usually 10.

Leaves usually ternate, oblong-lanceolate, decurrent on petioles 5–10 (15) mm. long. *M. longifolia.*

Leaves opposite, usually elliptic, the petioles mostly elongate or the leaves well-decurrent.

Leaves not or scarcely decurrent, about twice longer than broad.

Petioles usually appendaged; flowers sessile or subsessile; anthers tapering.

Anther connective obsolete, eglandular. *M. spennerostachya.*

Anther connective prolonged, glandular.....*M. pauciglandulosa.*

Petioles unappendaged; flowers sessile or on pedicels 0.5–3 mm. long; anthers truncate or linear.

Flowers mostly pedicellate.
M. centrodesma.
Flowers sessile or subsessile.
Anthers narrow but truncate; connective produced..*M. egensis.*
Anthers linear; connective not obvious.....*M. Chamissois.*
Leaves usually decurrent, more than twice longer than broad.....*M. prasina, M. pteropoda, M. longiracemosa.*
Calyx 3–5 mm. long or in any case scurfy or not globose-campanulate, often narrowed at base or constricted at limb.
Petioles margined nearly to base by the decurrent leaves.
Calyx lacerately opening; stigma punctiform.
M. decurrens.
Calyx evenly lobed; stigma peltate.
M. longiracemosa.
Petioles emargined, the leaves little if at all decurrent.
Branches and panicle-branches sharply margined.....*M. flaccida.*
Branches terete or bluntly tetragonous.
Calyx densely scurfy.
M. flaviflora, M. cremophylla.
Calyx lightly scurfy, soon glabrate or glabrous.
Flowers distinctly pediceled.
Flowers 5-merous.....*M. aurea.*
Flowers 6-merous.....*M. Grayana.*
Flowers subsessile.....*M. juruensis.*
Leaves not at all plinerved (unless in *M. theaezans*, the anthers 4-pored).
Upper petioles or some of them longer than 2 cm.
Branchlets sharply quadrate-sulcate...*M. sulcata.*
Branchlets obtusely tetragonous.
Leaves 9–11 cm. wide, ciliate..*M. Weberbaueri.*
Leaves 5–10 cm. wide, calloused-ciliate.
M. clathrantha.

Upper petioles rarely 2 cm. long or few of them so long.

Transverse leaf veins fine, numerous, approximate. *M. calophylla.*

Transverse leaf veins several mm. distant.

Anthers short, cuneiform or obovate.

Calyces minute, about 1 mm. long, sessile or nearly.

Style obsolete; leaves lanceolate, 3–5 cm. wide..... *M. brevistylis.*

Style obvious, soon exserted; leaves oblong-elliptic.

Anthers 4-pored; calyx lobed; style 2–3 mm. long..... *M. theaezans.*

Anthers 2-pored; calyx obscurely lobed; style 1 mm. long.... *M. galactantha.*

Calyces about 1.5–2 mm. long, pedicellate or sessile.

Calyces sessile, about 2 mm. long; leaves ample.... *M. coelestis, M. cremophylla.*

Calyces pedicellate, about 1.5 mm. long; leaves narrow.

Anthers 1-pored; leaves narrowed at base..... *M. elongata.*

Anthers 2-pored; leaves scarcely acute at base..... *M. glaberrima.*

Anthers narrow or linear.

Leaves oblong, caudate..... *M. cecidophora.*

Leaves broadly elliptic, acuminate. *M. egensis.*

Miconia abbreviata Markgr. Notizbl. Bot. Gart. Berlin 9: 1145. 1927.

Compressed younger branchlets compactly stellate-scurfy and somewhat minutely hirsute; leaves dark green and glabrate above, silvery brown beneath with a dense stellate-scurfy puberulence, obovate, narrowed at base, abruptly long-caudate, 3-nerved, about 8 cm. long and half as wide; flowers spicate, the inflorescence only 3 cm. long; calyx oblong, sessile, white-scurfy, 4 mm. long, 1.5 mm. across, with 5 broadly triangular small lobes; petals white, orbicular,

scurfy below; anthers acuminate; style 6 mm. long; ovary villous apically, 3-celled.—Section *Eumiconia*, vicinity of *M. aulocalyx* Mart. F.M. Neg. 17015.

Loreto: Mouth of Santiago, 2-meter tree, *Tessmann 4548*, type.

Miconia acreana Ule, Notizbl. Bot. Gart. Berlin 6: 360. 1915.

Younger parts, including inflorescence and leaf nerves beneath, rather conspicuously hirsute-villous; petioles 4–10 mm. long; leaves oblong-lanceolate, narrowed at base, long and acutely acuminate, notably thin, denticulate-ciliate, nearly glabrous above, minutely stellulate and long-hispidulous on the 5 nerves beneath, more shortly so on the veins, these reticulate, 10–18 cm. long, 3–5 cm. broad; panicles shorter than the leaves, few-flowered, the flowers 5-merous; calyx campanulate, glabrous, 4.5 mm. long, the 3-cornered acute teeth less than 1 mm. long; petals 3 mm. long; filaments 2.5 mm. long, the anthers as long, their cells a little narrowed above, the tip blunt; connective weakly 2-lobed; style 5 mm. long.—A slender-branched shrub. Probably a variety of *M. erioclada*. Section *Eumiconia*. F.M. Neg. 16999.

Río Acre: Seringal San Francisco, *Ule 9676*, type.

Miconia acuminifera Triana, Trans. Linn. Soc. 28: 105. 1871; 744.

Younger parts, as the peduncles and leaves beneath, very finely furfuraceous; petioles stout, 2–3 cm. long; leaves oblong-lanceolate, shortly decurrent into the petiole, abruptly caudate-acuminate, distinctly 5-plinerved, pale green, coriaceous, 2–2.5 dm. long, 7–10 cm. broad; flowers ternate at the tips of the branchlets of the pyramidal panicles; pedicels 1–2 mm. long; calyx densely scurfy, slightly constricted medially, 4 mm. long; filaments glabrous; connective simple.—Cf. *M. flaviflora*. Section *Tamonea*. F.M. Neg. 25921.

Peru (possibly). Colombia.

Miconia Adrieni Macbr. Field Mus. Bot. 4: 180. 1929.

Essentially glabrous except for a slight scaly scurfiness, especially at the nodes and on the calyx; petioles 1–2.5 cm. long; leaves elliptic, narrowed at both ends, 14–18 cm. long, 5.5–7.7 cm. broad, definitely 3-plinerved; panicles somewhat leafy, to nearly 1.5 dm. long, the branches acutely tetragonous; flowers 5-merous, subsessile, the calyx 4 mm. long, acutely lobed, the white acutish petals about as long; anthers oblong-linear, 1-pored, scarcely 3 mm. long, little attenuate, minutely bituberculate; style about 5 mm. long.—

Clump shrub, hillside thicket. Apparently near *M. elongata.* Named for M. Paul Adrien of the Huaron Mining Company. Section *Amblyarrhena.*

Huánuco: Pampayacu, *5077,* type.

Miconia albicans (Sw.) Triana, Trans. Linn. Soc. 28: 116. 1871; 785. *Melastoma albicans* Sw. Prodr. 70. 1788.

Branchlets and leaves beneath densely white-tomentose, in striking contrast to the glabrous dark-green upper surfaces of the latter, these subcoriaceous, ovate, subcordate at base, obtuse or acute, 3–5-nerved or slightly 3-plinerved, usually 6–14 cm. long; petioles 5–15 mm. long; calyx 2.5–3 mm. long; panicle branches secund, erect; petals 2.5 mm. long, anthers isomorphic, the connective somewhat produced, broadly lobed basally; style strongly dilated and truncate at the tip, 4–5 mm. long.—A compact shrub, or tree-like, 1–3 meters high. A Poeppig specimen in bud from Maynas, referred in herbaria to *M. holosericea* (L.) Triana, seems rather to belong here; the Linné plant has calyces 6–7 mm. long and linear anthers. The pubescence of both these species has been used as tinder. Section *Eumiconia.*

Huánuco: Pampayacu, *5103; Kanehira 22.* Chinchao, *Ruiz & Pavón.*—Junín: La Merced, *5520.* San Ramón, 1,000 meters, *Killip & Smith 24777.* Chanchamayo Valley, *Schunke 333.*—San Martín: Moyobamba, *Mathews 1296; Klug 2365.* Tarapoto, *Spruce 4265.* San Roque, *Williams 7437.*—Cuzco: Paucartambo, *Vargas 104.* Without locality, *Gay 2140.* Brazil to Mexico and the West Indies. "Yurac mullaca."

Miconia alpina Cogn. Bot. Jahrb. 42: 146. 1908.

Glabrous; branchlets acutely 4-angled; leaves minutely spinulose-serrulate, coriaceous, oblong, rounded at base, acute, 3-nerved, 4–5 cm. long, 1.5–2.5 cm. broad; petioles 1–2.5 cm. long; panicle many-flowered, 5–10 cm. long, the 4-merous flowers on pedicels 2–5 mm. long; calyx broadly campanulate, drying black, the dilated limb obscurely 4-lobed, 4–5 mm. broad; petals broadly obovate, 2.5 mm. long; filaments obscurely glandular-puberulent, to 3 mm. long, the arcuate anthers shorter, the style 4–6 mm. long.—Near *M. thyrsoidea;* cf. *M. andina* which as interpreted in this work should include the following collections.

Huánuco: Prov. Huamalies, 3,500 meters, *Weberbauer 3313* (cited first as type).—Cuzco: Above Yanamanchi, 3,900 meters, *Weberbauer 4593* (cited second as type).

Miconia alypifolia Naud. Ann. Sci. Nat. sér. 3. 16: 215. 1851; 878.

Glabrous, the slender branches acutely 4-angled; leaves obovate, attenuate at base, obtuse or rounded, 3-nerved, coriaceous, 1.5–2.5 cm. long, 10–18 mm. broad; petioles 2–4 mm. long; panicle thyrsoid, 2–3 cm. long; calyx ovoid, shortly and acutely dentate, 2.5 mm. long; petals broadly obovate, emarginate, 3 mm. long.—Shrub with pale green entire leaves. Section *Amblyarrhena*. F.M. Neg. 25924.

Cajamarca: West of Huambos, *Weberbauer 4168* (det. Cogn.); 260. Ecuador.

Miconia amazonica Triana, Trans. Linn. Soc. 28: 103. 1871; 735.

Branchlets and leaves beneath densely subscurfy-tomentose; petioles 7–15 cm. long; leaves broadly ovate-cordate, entire, shortly acuminate, glabrous above, subcoriaceous, 7–9-nerved, 2–3 dm. long, 1.5–2.5 dm. broad; panicle ample, with bracts 4–6 mm. long; calyx 5–6 mm. long; flowers 5–6-merous, the petals white-tomentose without, 5–6 mm. long; filaments hirtellous, not glandular; connective simple; style slightly pilose below, 12–14 mm. long; stigma capitate.—Section *Tamonea*. F.M. Neg. 17005.

San Martín: Tocachi, *Poeppig 2003*. Tarapoto, *Williams 6076* (det. Gl.).—Loreto: Yurimaguas, *Poeppig*. Puerto Melendez, *Tessmann 4780* (det. Markgr.). San Ramón, Yurimaguas, *Williams 4588*. Brazil. "Dispera sacha blanca," "dispero blanco," "nispero sacha blanco."

Miconia amplexans (Crueg.) Cogn. in Mart. Fl. Bras. 14, pt. 4. 256. 1887; 749. *Pogonorhynchus amplexans* Crueg. Linnaea 20: 107. 1847. *M. umbrifera* Naud. Ann. Sci. Nat. sér. 3. 16: 116. 1851. *M. symplectocaulos* Pilger, Verh. Bot. Ver. Brandenb. 47: 175. 1905, fide Gl.

Branchlets densely scurfy-tomentose; leaves sessile, obovate, abruptly acuminate and abruptly attenuate below, where typically auriculate, prominently 3-plinerved, sparsely or rarely densely stellate-puberulent beneath, entire or sinuate-denticulate, submembranaceous, often 3–4 dm. long and half as broad, the lateral nerves originating several to 12 cm. above the base; panicle ample, the flowers somewhat congested, minutely bracteolate, 5-merous; calyx oblong, truncate or obscurely 5-lobed, 7 mm. long; petals white, retuse, glabrous, 6–8 mm. long; connective curved into a half-circle (Gleason) pedicellate-glandular at base anteriorly; style 10–12 mm.

long; fruit blue.—Leaves typically amplexicaul with 2 prominent ears. Gleason refers here *Klug 88*, Mishuyacu, the uppermost leaves cuneate at base and not amplexicaul, *Williams 1577*, Loreto, with cuneate base, petioled leaves, and *Williams 1473*, *Klug 1419*, the stellate pubescence denser, longer and softer. These are probably referable to *M. tomentosa* (which cf.). Flowers variously reported as lilac to red. Section *Adenodesma*. F.M. Neg. 36304.

San Martín: Tocache, *Poeppig 1915*. San Roque, *Williams 7005*. —Huánuco: Pueblo Nuevo and Pillao, *Ruiz & Pavón*.—Loreto: Yurimaguas, *Poeppig 2408; Williams 4259*. Quebrada de Cancha-huaya (*Huber 1423*). Iquitos, *Tessmann 3599* (det. Markgr.); *Williams 3782; Klug 88; Klug 1419; Klug 288; Killip & Smith 26197*. Pebas, *Williams 1633; Williams 1577; Williams 1698*. Río Nanay, *Williams 677*. Caballo-Cocha, *Williams 2049*. Florida, *Klug 2278*. Pumayacu, *Klug 2325*.—Río Acre: *Krukoff 5489*. Without locality, *Gay 1447; 1524*. Bolivia to Trinidad and Central America. "Carache caspi," "muringa" (Yahua), "pichirina," "chaita ida" (Huitoto), "muringa."

Miconia amplexicaulis Naud. Ann. Sci. Nat. sér. 3. 16: 136. 1851; 776.

Branchlets densely tangled-hirsute, the longer trichomes barbellate; leaves ovate or elliptic, cordate-clasping, narrowly acuminate, coriaceous, soon glabrous above, a little hirtellous on the veins beneath, with sessile, stellate trichomes, 3-nerved and with 2 faint outer incomplete nerves, 1.5–3 dm. long, 7–12 cm. broad; panicle branches spicate, mostly simple, scurfy, the trichomes obscurely stellate, the stipe fuzzy as the trichomes on the leaf nerves beneath; calyx subtruncate, in age glabrate, sessile, costate, 2.5–3 mm. long; petals retuse, faintly puberulent without, about 2 mm. long; style 4–5 mm. long.—Var. *parvifolia* Cogn. has leaves somewhat triangular, acute, only 5–8 cm. broad. In the type there are no trichomes that are well-marked stellate above the stipe. The Poeppig specimen from Pampayacu has extremely caudate-acuminate leaves. Section *Eumiconia*.

Huánuco: Cuchero and Pampayacu, *Poeppig 11; 78; 1424; Mathews 1719; 1728*. Chinchao, *Ruiz & Pavón*.—San Martín: San Roque, *Williams 7005* (det. Gl.). Mount Campana, *Spruce 4373*, type var.

Miconia andina Naud. Ann. Sci. Nat. sér. 3. 16: 236. 1851; 935. *Chiloporus andinus* Naud. l.c. sér. 3. 4: 57. *pl. 3*. 1845.

Branchlets quadrate, glabrous or with a few setae only at the nodes; petioles glabrate or somewhat setose, 7–20 mm. long; leaves

remotely denticulate, oblong-ovate, rounded at base, acuminate, yellowish, glabrous above, rarely a little pilose beneath, 3-nerved, 3–4.5 cm. long, or sometimes twice as long, 10–17 mm. wide or wider; panicle dense, narrow, glabrous, 5–12 cm. long; pedicels 1–5 mm. long; calyx 3–4 mm. long, the minute teeth ovate, glabrous; petals 4 (typically), 2.5–3 mm. long; style 3 mm. long, broadly capitate-peltate.—In the Gay specimen the leaves are 8 cm. long, 3.5 cm. wide, glabrous; apparently the leaves may be entire except for the stout remote cilia; there are really only 3 principal nerves with 2 outer very faint ones. The species appears to be variable in pubescence development; cf. Naudin, l.c.; probably *M. Ottikeri* ought to be included, as well as *M. alpina, M. latifolia, M. laurina.* Section *Chaenopleura.* F.M. Neg. 25926.

Piura: Huancabamba, *Weberbauer 6083.*—Huánuco: Yanano, *4930.*—Cuzco: Marcapata, 3,300 meters, *Weberbauer 7792.* Near Cuzco, *Gay.* Cerro de Cusilluyoc, 3,800 meters, *Pennell 13859.*—Puno: Tabina, *Lechler 2062; 2067.* Bolivia to Colombia and Venezuela. "Mote mote."

Miconia aprica Gleason, Bull. Torrey Club 58: 244. 1931.

Similar to *M. peruviana;* branches above and petioles (10–15 mm. long) pilose with long branched trichomes; leaves yellowish-green, obovate to ovate-oblong, acuminate, spinulose-denticulate, scabrous above, 7–10 cm. long, half as wide; panicle freely branched, 5–12 cm. long, densely pilose-tomentose-stellate; calyx glabrous, red-punctate; sepals acute, 0.5 mm. long; petals obovate, 1.1 mm. long, not retuse; anthers 2.5 mm. long, the connective slightly prolonged, somewhat elevated; style stout, glabrous, about 1.5 mm. long, the stigma truncate.—A tree or shrub sometimes 8 meters high, the leaves mealy, stellate on the nerves and yellowish-green beneath, sparsely scabro-setulose above. Section *Cremanium.*

Junín: In thickets and open woods, 2,000 meters, Huacapistana (*Killip & Smith 24246*), type; *2431b.* Carpapata, 2,700 meters, *Killip & Smith 24381.*—Ayacucho: Ccarapa (*Killip & Smith 22311*).

Miconia argyrophylla [Schrank & Mart.] DC. Prodr. 3: 181. 1828; 789. *Melastoma argyrophyllum* Schrank & Mart. ex DC. l.c., in syn.

Very similar to *M. albicans* but the younger branchlets evidently quadrate, the angles sharp and the petals glandular-ciliate; petioles sometimes longer; leaves membranous, to 2.5 dm. long, 10 cm. wide, long-acuminate; flowers 5-merous; calyx about 3 mm. long, the lobes

0.5 mm. long; petals 2.5 mm. long, the glandular trichomes conspicuous; style 6.5 mm. long; connective obviously produced, nearly bilobed in front.—The Peruvian collection by Ruiz & Pavón has not been verified. Section *Eumiconia*. Illustrated, Mart. Nov. Gen. & Sp. 3: *pl. 284*.

Peru: Without locality (*Ruiz & Pavón*). Widely distributed, South America.

Miconia aspergillaris (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 214. 1851; 883. *Melastoma aspergillaris* Bonpl. Melast. 44. *pl. 19*. 1816.

Branchlets and leaves beneath densely stellate-tomentose; petioles 2–6 mm. long; leaves minutely denticulate, ovate-oblong, obtuse, often rounded at base, glabrous above, 3-nerved, 2–3 cm. long, 10–13 mm. wide; flowers crowded, sessile or pedicellate, the inflorescence 2–3 cm. long; calyx 2 mm. long; petals white, suborbicular, 2 mm. long; style 4 mm. long, the stigma slightly enlarged.—Section *Amblyarrhena*. F.M. Neg. 25931.

Cajamarca: West of Huambos, 3,000 meters, *Weberbauer 4162* (det. Cogn.); 260.—Piura: Prov. Huancabamba, *Weberbauer 6052*. Colombia; Ecuador.

Miconia atrofusca Cogn. Bot. Jahrb. 42: 142. 1908.

Branchlets and leaves beneath shortly and densely papillose-pilose; petioles 4–7 mm. long; leaves rigid, oblong, acutish, narrowed to the obtuse base, very shortly and densely setulose above, not foveolate beneath, 3-nerved, 5–8 cm. long, 2–3 cm. broad; panicle 5–8 cm. long, the minute flowers crowded, sessile; calyx minutely 5-dentate, 2 mm. long; petals subrotund, about 1 mm. long; style 3 mm. long, the stigma capitate.—A specimen by Ruiz & Pavón without locality, Markgraf as *M. caelata*, rather belongs here. Section *Cremanium*. F.M. Neg. 17017.

Huánuco: Southwest of Monzón, *Weberbauer 3726*, type. Playapampa, *4875*. Villcabamba, *5188*.

Miconia aulocalyx Mart. ex Triana, Trans. Linn. Soc. 28: 115. 1871; 771.

Branchlets under a lens densely covered with a stellate lepidote tomentum; petioles 1.5–4 cm. long; leaves thin, elliptic-ovate, abruptly acuminate, acutish at base, green above, silvery beneath with appressed stellate-pilose pubescence, 3-nerved or obscurely 3-plinerved, 1–2 dm. long, 5–12 cm. broad; spikes paniculate; calyx

stellate-scurfy, 10-sulcate, truncate or obscurely 5-lobed, 2.5–3 mm. long; petals 1.5 mm. long; style 4–5 mm. long.—Section *Eumiconia*. F.M. Negs. 25933; 17013.

Loreto: Yurimaguas, *Poeppig 2308*, type; *Williams 487; 5282* (det. Gl.). Río Nanay, *Williams 485; 487*. Iquitos, *Killip & Smith 27406*. Colombia; Brazil.

Miconia aurea (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 745. *Chitonia aurea* D. Don, Mem. Wern. Soc. 4: 319. 1823.

Branchlets glabrous or slightly scurfy; petioles 1–4 cm. long; leaves oblong-elliptic, long-acuminate, glabrous or glabrate except sometimes minutely scurfy beneath on the nerves, 1–2 dm. long, 3–7 cm. broad, 3-plinerved; panicle thyrsoid, 1 dm. long or longer, the pedicels 2–3 mm. long; calyx reddish, slightly stellate-scurfy, to 3 mm. long; petals 4–5 mm. long, scurfy without; filaments glabrous or the connective glandular; style 7–8 mm. long.—The var. *latifolia* Markgr. has leaves 2 dm. long, half as wide, conspicuously sinuate-margined. Section *Tamonea*. F.M. Neg. 17014.

Junín: Chanchamayo Valley, *Schunke 334; 276*.—San Martín: Tarapoto, *Spruce 4244*. Vchiza, *Ruiz & Pavón*.—Huánuco(?): Río Huallaga (*Mathews 1302*).—Loreto: Yurimaguas, *Poeppig 2213; 2319; Williams 7858* (det. Gl.). Mouth of Apaga, *Tessmann 4829* (var. *latifolia*). Maucallacta, Río Paranápura, *Klug 3930* (det. Standl.). Brazil.

Miconia aureoides Cogn. in Mart. Fl. Bras. 14, pt. 4: 260. *pl. 52*. 1887; 762.

Branchlets densely scurfy; petioles 1–2 cm. long; leaves subcoriaceous, obovate-elliptic, abruptly acuminate, slightly stellate-scurfy, becoming glabrous, 3–5-plinerved, the larger 10–15 cm. long, 4–7 cm. broad, the smaller scarcely half as long; panicle somewhat nodding, 5–10 cm. long, the flowers 5-merous, sessile or subsessile, minutely bracteolate; calyx to 4 mm. long, scurfy-stellate, campanulate, the thin limb closed and obtuse, finally lacerating into irregular persistent lobes; petals 5–6 mm. long; anthers elongate, minutely 1-pored, the connective eglandular; style 6–7 mm. long.—Section *Laceraria*. F.M. Neg. 21183.

San Martín: Tarapoto, *Spruce 4519*, type; (*Killip & Smith 29528*, "tentatively," Gleason).—Loreto: Cerro de Ponasa, 1,100 meters, *Ule 6748* (distr. as *M. coronata* (Bonpl.) DC., Colombian).

Miconia Barbeyana Cogn. Melast. 872. 1891.

Glabrous or nearly so; leaves thin, lustrous, oblong-elliptic, acute at base, shortly acuminate, 3-plinerved, with 2 very faint outer

nerves, 1–2 dm. long, 4–7 cm. broad, entire, the petioles to 3 cm. long; panicle many-flowered; pedicels about 1 mm. long; calyx 1.5 mm. long, broadly urceolate, obscurely lobed; petals ovate, 1 mm. long; anthers obovate, 1 mm. long; style 4 mm. long, the stigma subpeltate.—Perhaps the 4-merous variant of *M. Terera*. Section *Amblyarrhena*. F.M. Neg. 34153.

Huánuco: Chicoplaya, *Ruiz & Pavón*, type.

Miconia Bailloniana Macbr., nom. nov. *Pterocladon Sprucei* Hook. f. ex Cogn. in Mart. Fl. Bras. 14, pt. 4: 209. *pl. 45*. 1886; 697, not *M. Sprucei* Triana.

Glabrous shrub with acutely angled sulcate branches (wing-angled in the inflorescence), thin, slender petioles, 5-plinerved leaves and small flesh-colored flowers borne in short terminal panicles; leaves ovate-lanceolate, shortly acuminate, usually unequal, the larger to 2.5 dm. long, 10 cm. broad, the smaller half the size; calyx slightly 4-winged below, the wings alternate with the ovate obtuse lobes, dark purple, the tube about 4 mm. long, the lobes scarcely half as long; petals fleshy, 4–5 mm. long. The ebracteolate pedicels are 4-winged.—According to Weberbauer, ants inhabit the stems.

Although Baillon, Hist. Pl. 7: 17, 54. 1880, reduced *Pterocladon* to *Miconia* (without, however, transferring the single species) it has been maintained as a genus chiefly on the basis of the winged inflorescence including the calyx base, the ovary rough. These characters in some degree occur also in *Tococa*, and in *Miconia* in different sections, as in *M. flaccida* and in *M. expansa;* the anthers are nearly those of Section *Amblyarrhena* that contains species with anther connective enlarged, more than in *Tococa* with different ovary and aspect.

San Martín: San Roque, *Williams 7050* (det. Gl.). Campana, *Spruce 4312*, type. Valley of the Monzón, *Weberbauer 4764* (det. Cogn.); 291.—Junín: Pichis Trail, *Killip & Smith 26102*, "a teratological form with abortive flowers" (Gleason).

Miconia barbinervis (Benth.) Triana, Trans. Linn. Soc. 28: 113. 1871; 778. *Clidemia barbinervis* Benth. Bot. Voy. Sulphur 95. 1844.

Branchlets, leaves beneath on the nerves and inflorescence, even to the calyces, densely long-hirsute with stiped-stellate trichomes; petioles 3–7 (–10) mm. long; leaves elliptic, acute at base, acuminate, obscurely repand-denticulate, sparsely pilose-setulose above, the trichomes simple, prominently 3-nerved with a marginal pair of faint nerves, usually 1–2 dm. long and about half as broad; panicles

few-flowered, short-pyramidal, the branches spreading, the flowers verticillate at or toward their tips; calyx 3–4 mm. long; petals retuse, 3 mm. long; connective scarcely produced, minutely biauricled; style strongly enlarged apically, 4–6 mm. long.—One of those species marked by the long trichomes that are stellately branched at their tips.—Cf. also *M. stelligera*, *M. clavistila*. Section *Eumiconia*.

Huánuco: Cuchero, *Poeppig 1009; 1451; 1627*.—San Martín: Río Tocachi, *Poeppig 1864*. Pongo de Cainarachi, tree 4 meters, flowers rose, in clearing, *Klug 2619* (det. Standl.).—Loreto: Near Iquitos, *Klug 927*. Pebas, *Williams 1795* (det. Gl.). Florida, *Klug 2218* (det. Standl.).—Río Acre: *Krukoff 5347* (det. Gl.). Brazil to Nicaragua and Trinidad. "Acaño-fue," "pero-ey" (Huitoto).

Miconia biglandulosa Gleason, Bull. Torrey Club 59: 367. 1932.

Tree 2–5 meters high, the younger obtusely 4-angled and 4-sulcate branches very stellate-scurfy with bright trichomes, the firm leaves beneath similarly but less densely pubescent, glabrous above, oblong-obovate, acuminate, subcordate at base, subentire, 5-plinerved, 2.5–3.5 dm. long, 1–1.5 dm. wide; panicle narrow, densely brown-scurfy like the stem, freely branched; flowers sessile, 5-merous; calyx cylindric, tomentulose, nearly 6 mm. long with ovate-obtuse lobes 0.8 mm. long; petals oblong-obovate, 5 mm. long, retuse, essentially glabrous; stamens nearly isomorphic, the filaments glabrous, 4 or 5 mm. long, equaled by the subulate, slightly arcuate anthers, the slender connective elevated near the base; the sides extending into 2 lobes marginally biglandular, the glands stalked.—Petals greenish-white, filaments and style white, anthers purple (K. & S.).

Loreto: Iquitos, *Killip & Smith 26933*, type.

Miconia brachyanthera Triana, Trans. Linn. Soc. 28: 129. 1871; 900.

Branchlets densely substrigose-hirsute, obtusely tetragonous; leaves ovate-oblong, obtuse, rounded at base, sparsely short-setulose above, densely papillose-hirtellous beneath, at least on the nerves, 1.5–2 dm. long, 6–9 cm. broad, 5-plinerved, on petioles 2–3 cm. long; panicle broadly pyramidal, 7–8 cm. long, the minute flowers glomerate; calyx sessile, tube glabrous, 2 mm. long, the 5 lobes short, the petals scarcely 1 mm. long; style 1 mm. long, the stigma truncate.—The broadly pyriform or subglobose anthers are only 0.5 mm. long. Nearly *M. caerulea* unless separable by shorter pubescence and character of stigma. Section *Cremanium*.

Huánuco: Casapi (*Mathews 1726*). Without locality (*Haenke*).

Miconia brachybotrya Triana, Trans. Linn. Soc. 28: 111. 1871; 818.

A small tree, the branches, petioles and leaves beneath densely long-hirtellous (the trichomes subappressed) but the leaves completely glabrous and plane above, elliptic-obovate, shortly and obtusely acuminate, acutish at base, entire, nearly basally nerved or barely 5-plinerved, membranous, rather unequal, the larger about 2 dm. long and half as broad; panicles congested, 4–5 cm. long; calyces sessile, minutely and sparsely pilose, about 3 mm. long, the white petals as long, the style twice as long; anthers broadly subulate, obscurely 2-lobed at base; ovary truncate, glabrous.—The glabrate obconic calyces are densely hairy about their bases. Section *Eumiconia*. F.M. Neg. 17022.

Loreto: Mouth of Santiago, *Tessmann 4452*. Brazil.

Miconia bracteata (DC.) Triana, Trans. Linn. Soc. 28: 111. 1871; 780. *Clidemia bracteata* DC. Prodr. 3: 162. 1828.

Stems, petioles, leaves beneath and inflorescence except the bracts densely long-hirsute, the trichomes subappressed, rather stiff, especially those of the branches; leaves oblong-ovate, serrulate, cuneately subrotund at base, sparsely setulose above, 1–2.5 dm. long, shortly 3–(5) plinerved; petioles 1–5 cm. long; flowers rotundly bracteate in small glomerules at tips of the panicle branches; calyx 2–3 mm. long, the lobes erect, the outer teeth shorter; petals 4–5 mm. long; stamens alike, slender, the filaments and anthers subequal, 2.5–3 (4) mm. long; connective prolonged backward; ovary two-thirds free, pubescent above.—It is not certain that the Peruvian collection, given a name in syn. by Triana, is the same as the plant from the Guianas. *M. papillosa* (Desr.) Naud., 892, from Bolivia and Ecuador, with very obtuse strongly bullate leaves, might be sought here. Section *Eumiconia*. F.M. Neg. 36255.

Loreto: Prov. Minas (*Poeppig 1865*). Guianas.

Miconia brevis Macbr. Field Mus. Bot. 4: 188. 1929.

Small, entirely glabrous shrub with terete branches, obscurely crenulate-denticulate, subcoriaceous, ovate-elliptic leaves rounded or nearly rounded at both ends, and nodding panicles of white flowers; petioles 1–2 cm. long; leaf nerves 5, only 3 prominent; pedicels scarcely 1 mm. long; calyx obscurely 5-denticulate, 2 mm. long; petals irregularly suborbicular; filaments triangular, 1.5 mm. long; anthers broadly obovoid, scarcely 1 mm. long; style glabrous, nearly

5 mm. long; stigma capitellate.—Nearly *M. media*, but leaves shortly plinerved, mostly 4 cm. long, usually at least half as broad; completely glabrous as also the petioles.

Piura: Between Huancabamba and Ayavaca, *Weberbauer 6334*, type.

Miconia brevistylis Cogn. Bot. Jahrb. 42: 144. 1908.

Entirely glabrous shrub 3 meters high, with stout, obtusely angled branches; petioles 6–12 mm. long; leaves rather coriaceous, lanceolate, long-attenuate at base, entire or remotely and finely denticulate, 3-nerved, to 2 dm. long, 4–5 cm. broad; panicle broad, the minute 5-merous sessile flowers in small glomerules; calyx 1 mm. long, the teeth broadly triangular; petals white, scarcely 1 mm. long; style nearly obsolete, the stigma punctiform.—Section *Cremanium*. F.M. Neg. 17024.

Huánuco: Prov. Huamalies, 1,600 meters, *Weberbauer 3553*, type.

Miconia bubalina [Pav.] Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 733. *Melastoma bubalina* Pav. ex D. Don, Mem. Wern. Soc. 4: 319. 1823, in syn. *Chitonia bubalina* D. Don, l.c.

Branches, leaves beneath and inflorescence densely scurfy-tomentose with minute, often reddish trichomes; petioles 1–4 cm. long; leaves closely but rather prominently crenulate-serrulate (or apparently or sometimes entire), elliptic-oblong, acuminate, the stellate pubescence beneath extremely compact, glabrous above, 5-nerved, 1–3 dm. long, 5–10 cm. broad; panicle about 1 dm. long, not open, the bracts 5–7 mm. long; calyx 6–7 mm. long, as also the petals, these tomentose without; filaments hirtellous, not glandular; style pilose below, 1 cm. long.—Killip & Smith made 3 collections in Loreto (Gleason). With *M. serrulata*, probably not distinct from *M. dodecandra*. Section *Tamonea*. F.M. Neg. 17025.

Loreto: Iquitos, *Williams 3666; 3707* (det. Gl.); *Killip & Smith 27216*. Lower Río Nanay, *Williams 678*. Without locality, *Ruiz & Pavón*. Brazil to Trinidad.

Miconia bullata (Turcz.) Triana, Trans. Linn. Soc. 28: 130. 1871; 935. *Schizanthera bullata* Turcz. Bull. Soc. Nat. Mosc. 1862, pt. 2: 322. 1862.

Branchlets densely clothed with red scales and trichomes; leaves subrotund, small, petioled, glabrous but bullate-tuberculate above, pilose on the conspicuous veins beneath, 3-nerved; flowers bracteate at base in axillary 2-flowered racemes; petals 4, obovate-rotund,

small; calyx lobes short, the tube campanulate; style exserted, the stigma capitate.—Section *Chaenopleura*.

Peru: (*Mathews 873*, type).

Miconia buxifolia Naud. Ann. Sci. Nat. sér. 3. 16: 208. 1851; 917.

Much-branched shrub with slender, obtusely quadrate branchlets; petioles 2–3 mm. long; leaves coriaceous, entire, obovate, glabrous beneath, slightly punctate above, 3-nerved, 8–12 mm. long, 5–8 mm. broad; panicle 1–3 cm. long, closely flowered; calyx 2 mm. long, pedicellate, the pedicel 1–1.5 mm. long; petals white, 1.5 mm. long; style 3–4 mm. long.—The leaves typically are rounded at apex; in the Weberbauer specimen they are acutish; the calyx, too, is a little narrower. Section *Cremanium*. F.M. Neg. 25936.

Huánuco: Huambos, *Weberbauer 4163* (det. Cogn.); 260. Colombia; Venezuela.

Miconia caerulea [Pav.] Naud. Ann. Sci. Nat. sér. 3. 16: 245. 1851 (name); 899. *Melastoma caerulea* Pav. ex D. Don, Mem. Wern. Soc. 4: 313, 1823, in syn. *Cremanium caeruleum* D. Don, l.c. *Miconia agyna* Naud. l.c. 232.

Branchlets quadrisulcate and, as the leaves beneath, rather densely pilose with simple trichomes; petioles about 1 cm. long; leaves membranous, elliptic-oblong, subrounded at base, acuminate, sparsely setulose-asperous above, long-pilose on the 3–5 nerves beneath, 8–15 cm. long, 2.5–5 cm. broad, entire; panicles broad, about 1 dm. long, the branches densely hispid; calyx sessile, urceolate, tube glabrous, dentate, 1.5 mm. long; petals scarcely 1 mm. long; style 2.5 mm. long, the stigma broadly peltate.—The leaves in the type are very shortly 3-plinerved, but with 2 outer faint marginal nerves; young parts reddish-purple pubescent. Section *Cremanium*. F.M. Neg. 17027.

Huánuco: Chinchao, *Ruiz & Pavón*, type; (*Haenke; Mathews 1177*).—Junín: San Ramón, *Killip & Smith 24758* (det. Gl.).—San Martín: San Roque, *Williams 7757; 7419* (distr. as *M. ibaguensis*). Ecuador.

Miconia calophylla (D. Don) Triana, Trans. Linn. Soc. 28: 129. 1871; 918. *Cremanium calophyllum* D. Don, Mem. Wern. Soc. 4: 313. 1823. *M.*(?) *myrtiformis* Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851.

Related to *M. buxifolia* Naud. but the branchlets robust, nodose, 4-sided, and the leaves cuneately oblong-obovate, ample, even to

1.5 dm. long and 6 cm. wide, entire, coriaceous, with many slender transverse veins; petioles 1.5–2 cm. long; panicle to 1.5 dm. long; calyx 1.5 mm. long; petals white, less than 1 mm. long.—The leaves simulate those of some *Guttiferae* or *Blakea*. The mid-nerve is pronounced, with 2 faint submarginal nerves. Section *Cremanium*. F.M. Neg. 17029.

Peru: Patasania, in 1787, *Ruiz & Pavón*, type.

Miconia calvescens [Schrank & Mart.] DC. Prodr. 3: 185. 1828; 799. *Melastoma calvescens* Schrank & Mart. ex DC. l.c., in syn.

Branchlets, these often sulcate, inflorescences and sometimes the 5 leaf nerves beneath more or less mealy-pubescent with minute stellate trichomes; petioles 2–6 cm. long; leaves somewhat undulate or repand-denticulate, ovate or oblong-elliptic, acute or acuminate, rounded or subcordate at base, to narrowed (rarely), in age glabrous or nearly, sometimes 4 dm. long; flowers mostly congested at the ends of the spreading-ascending panicle branchlets; calyx about 3 mm. long, nearly entire; petals 2–3 mm. long; connective minutely bilobed anteriorly; style 5–7 mm. long, the stigma subpeltate.—Tree sometimes 10 meters high, but often bushy. Very common in the lowlands of Peru and down the Amazon to its mouth (Gleason, who lists many collections). Section *Eumiconia*.

Cajamarca: Prov. Jaén, 1,500 meters, *Weberbauer 6199*.—Huánuco: Pozuzo, *4653*(?). Cuchero, *Ruiz & Pavón; Dombey*.—San Martín: Tarapoto, *Spruce 4551*. Valley of the Monzón, *Weberbauer 3576;* 287. Moyobamba, *Mathews 1301*. Pongo de Cainarachi, *Klug 2633*(?).—Junín: La Merced, *5262*. Puerto Yessup, *Killip & Smith 26258*. Colonia Perené, *Killip & Smith 25028*.—Ayacucho: Estrella, *Killip & Smith 22653*.—Loreto: Prov. Minas, *Poeppig 2914*. Iquitos, *Tessmann 3551* (det. Markgr.). Pebas, *Williams 1618; 1619; 1742; 1637*. Caballo-Cocha, *Williams 2457; 2116*. Pongo de Manseriche, *Mexia 6264; 6345*. Florida, *Klug 2207*. La Victoria, *Williams 2703; 2876; 2936*. Río Nanay, *Williams 297*. Río Itaya, *Williams 3367; 3314; Killip & Smith 29560*. Near Iquitos, *Klug 1428; Williams 1386; 1479*.—Puno: San Gabán, *Lechler 2394; 2394a*. Widely distributed, South America. "Juzegoro-ey," "misha" (Yahua), "huisha" (Huitoto).

Miconia cannabina Markgr. Notizbl. Bot. Gart. Berlin 9: 1145. 1927.

Branchlets compactly white-scurfy; leaves verticillate, narrowly lanceolate, sharply acuminate, decurrent on the short petioles,

densely but minutely scurfy on the veins beneath and the 3 nerves, glabrous above, about 1 (–2) dm. long, only 3.5 (–4.5) cm. wide; panicles to 2 dm. long, 8 cm. wide, the alternate branches secund; calyx sessile, densely scurfy, about 2 mm. high, minutely 5-lobed, the limb persistent in fruit; petals 2 mm. long, glabrous; style glabrous, 5 mm. long.—The type was about 2.5 meters high. Said to be common near Iquitos. Section *Eumiconia*.

Loreto: Marsh at Iquitos, *Tessmann 5056*, type; *3519; Klug 1076; Williams 297; 2116; 3367*, and other collections det. Gl. Río Itaya, *Williams 65*. "Mullaca."

Miconia capitata Ule, Notizbl. Bot. Gart. Berlin 6: 360. 1915.

Branchlets and petioles densely clothed, almost velvety, with shortly stiped or subsessile stellate trichomes; petioles 2–3.5 cm. long; leaves membranous, broadly obovate-elliptic, shortly acuminate, cuneate at base, 1.5–2.5 dm. long, 1 dm. wide or wider, soon glabrous above, lightly pubescent beneath with loosely stellate branched trichomes, especially on the 5–7 (2 faint) nerves and at margins, the trichomes sessile or shortly stiped; flowers 5-merous, sessile in a small capitately congested panicle, 2–3 cm. long and broad; calyx 5.5 mm. long, the dilated limb with 5 separate fascicles of stellate trichomes or glabrate; petals 5 mm. long; anthers linear-ellipsoid, attenuate, 5 mm. long, the connective anteriorly gibbous at base; style 6 mm. long.—Section *Eumiconia*.

Loreto: Pongo de Cainarachi, *Ule 6367*, type. Balsapuerto, 1 meter shrub with white and rose flowers, *Klug 2873* (det. Gl.).

Miconia cauingia Macbr., spec. nov.

Arbuscula glaberrima 2–4 dm. alta; petiolis usque 10 mm. longis; foliis ovatis vel ovato-ellipticis basi rotundatis et minute emarginatis, obtusis, usque 2.5 cm. longis, 13 mm. latis, supra nitidulis fere planis vel paullo bullatis, subtus pallidioribus nervis (3) et venis reticulatis paullo notatis, rigide coriaceis, margine minute vel obscure calloso-crenulatis; paniculis paucifloris circa 3 cm. longis; floribus 4-meris, pedicellis 2–4 mm. longis; calyce late campanulato undulato obscure lobato, apice 5 mm. lato; petalis late obovato-rotundatis 2.5 mm. longis; staminibus glabris, filamentis 2.5, antheris 1.5 mm. longis; stylo leviter piloso circa 3 mm. longis, stigmate vix dilatato.—Handsome shrub with glossy leaves and waxy white flowers sometimes faintly rose-colored within; fruit said to be edible (Stork & Horton). Section *Chaenopleura*.

La Libertad: Above Cachicadan, against boulders, open areas, 3,500 meters, *Stork & Horton 9992*, type. "Caningia."

Miconia cayumbensis Gleason, Bull. Torrey Club 66: 416. 1939.

Slender terete younger branches, leaves beneath and calyces minutely ashy-stellate-pubescent; petioles 5–8 mm. long; leaves firm, glabrous above, 3-nerved, elliptic or oblong, acute at base, shortly acuminate, obscurely and remotely denticulate, to 16 cm. long, 6 cm. wide; inflorescence paniculate, about 10 cm. long; flowers sessile, 5-merous, the campanulate calyx 2 mm. long, the broadly rounded sepals 0.3–0.4 mm. long, the outer teeth reduced to a callus; petals 2.8 mm. long, narrow; stamens dimorphic, the filaments 3.3 and 2.8 mm. long; anthers thick-linear; connective in inner series with one dorsal lobe and 2 lateral.—Width of anther pore suggests *Eumiconia;* with more natural classification will probably be placed near *M. longifolia* and *M. minutiflora* now assigned to section *Glossocentrum* (Gleason). These also have dimorphic stamens but the former has plinerved leaves and in the latter as in *M. puberula* the leaves are rounded at base. A tree 10 meters high, or a clump shrub, the flowers fragrant, white.

Huánuco: Near mouth of Río Cayumba, 880 meters (*Mexia 8285*, type).—Junín: La Merced, *5476*.—Loreto: Balsapuerto, *Klug 3036*.

Miconia cecidophora Naud. Ann. Sci. Nat. sér. 3. 16: 166. 1851; 796.

Branchlets pilose(?); petioles 1–3 cm. long; leaves chartaceous, repand-denticulate, glabrous above, obscurely and most minutely scurfy (or pilose?) beneath on the 3–5 nerves, stellate-punctate, oblong-lanceolate, long-caudate-acuminate, 1–2 dm. long, 3–7 cm. broad; flowers not secund, the corymbs crowded; calyx campanulate, minutely and acutely 5-lobed, 2.5 mm. long; petals 2.5–3 mm. long, narrowly obovate; style 5–6 mm. long, the stigma clavate-punctate.—The mature leaves show only some scattered minute scales beneath, are often scarcely 10 cm. long, 3 cm. wide and with no pilose or lepidote pubescence. Section *Eumiconia*. F.M. Negs. 17033; 36285.

Loreto: Pampa del Sacramento, *Castelnau*. Brazil.

Miconia centrandra Ule, Notizbl. Bot. Gart. Berlin 6: 361. 1915.

Simulates closely *M. centrodesma* but the flowers are sessile and 4-merous; calyx scarcely 1.5 mm. long, the limb truncate, mucronu-

late by the outer teeth, completely smooth; petals bright yellow, round-elliptic; style 5 mm. long; anthers ellipsoid, the connective spurred posteriorly; ovary 4-celled.—Placed by the author in section *Glossocentrum* but apparently rather belongs to section *Amblyarrhena*. F.M. Neg. 17034.

Río Acre: *Ule 9675*, type.

Miconia centrodesma Naud. Ann. Sci. Nat. sér. 3. 16: 164. 1851; 850.

A glabrous slender-branched shrub or the branchlet tips and the lax panicles minutely and sparsely scurfy; petioles 1.5–5 cm. long; leaves chartaceous, 5-plinerved, usually broadly elliptic, rounded to the acute base, sharply acuminate, obscurely appressed-ciliate on the subentire or repand-crenulate margins, 6–12 cm. broad, often twice as long; calyces about 2 mm. long, pedicellate or subsessile; petals white, to 1.5 mm. long; connective conspicuously spurred.—Section *Glossocentrum*. F.M. Neg. 17035.

Loreto: Mouth of Río Blanco, *Tessmann 3034* (det. Markgr.). Río Nanay, *Williams 1127* (det. Gl.). Brazil; Colombia; Nicaragua.

Miconia centrophora Naud. Ann. Sci. Nat. sér. 3. 16: 209. 1851; 883.

Similar to *M. aspergillaris* but leaves becoming twice as large, minutely scurfy-stellate only on the nerves and veins beneath, the petioles 1–2 cm. long, the petals yellow, 1.5 mm. long, and the stigma subcapitate. There are a few stiffer trichomes mixed with the dense scurfy-stellate pubescence in panicles and on branchlets.—*M. pichinchensis* Benth., 881, was found by Ruiz & Pavón as near as Guayaquil; its thin, subsessile leaves are subcordate at base, the flowers openly borne on pedicels 2–7 mm. long. Section *Amblyarrhena*. F.M. Neg. 25938 (as to *Mathews* plant).

Amazonas: Chachapoyas, *Mathews 1263*.—Cajamarca: Pass south of Conchón, prov. Chota, 2,500 meters, *Stork & Horton 10079*. Ecuador?

Miconia Chamissois Naud. Ann. Sci. Nat. sér. 3. 16: 179. 1851; 800.

Glabrous shrub (or inflorescence reddish-puberulent) with obtusely angled branches or these lightly compressed above, and firm 3–5-plinerved leaves; petioles to 2 cm. long; leaves ovate, more or less acuminate, sometimes scarcely decurrent at base, to 2 dm. long, about half as broad; panicle ample, the sessile flowers crowded at

the tips of the branches; calyx campanulate, 2.5–3 mm. long, the limb subtruncate; petals white or pale rose, somewhat truncate, about 2 mm. long; stamens dimorphic, the connective of the larger prolonged and broadly dilated, that of the smaller shorter with 2 deflexed lateral lobes (Gleason); style 5 mm. long.—The Peruvian collections are reddish-puberulent in inflorescence and perhaps should be studied further, especially since the flowers are not aggregated. Section *Eumiconia*. F.M. Neg. 17037.

Loreto: Iquitos, *Williams 7982; Killip & Smith 27178; Klug 339* (det. Gl.). Widely distributed, South America.

Miconia chionophila Naud. Ann. Sci. Nat. sér. 3. 16: 236. 1851; 935.

Branches crisply hirsutulous, spreading or possibly scandent; petioles hirtellous, 0.5–2 cm. long; leaves narrowly ovate or subrotund, more or less rounded at base, obtuse, sparsely setulose or glabrate above and beneath, the margins undulate and ciliate, 1–2.5 cm. long, 6–15 mm. broad, 3-nerved; flowers usually ternate; calyx 3–4 mm. long; petals retuse, 3 mm. long; style 3 mm. long, the stigma broadly peltate.—The type from Colombia is rather more pubescent than the Peruvian form; Triana wrote the name *chionophylla*. Doubtfully distinct from *M. rotundifolia*. Section *Chaenopleura*. F.M. Neg. 17038; 36286.

Puno: Tabina, *Lechler 2063; 2065*. Bolivia; Colombia.

Miconia chrysanthera Cogn. Bot. Jahrb. 42: 141. 1908.

Shrub 3 meters high, the obtusely angled younger branches as the petioles and leaves beneath, these more especially on the 5 nerves, stellate-puberulent; petioles 8–25 mm. long; leaves nearly membranous, plane, narrowly ovate, rounded at base, entire or subentire, very shortly acuminate, glabrous above in age, sometimes sub-5-plinerved, 4–8 cm. long, 2–3.5 cm. broad; panicle peduncles stellate and sparsely setulose, the many 5-merous flowers on pedicels 1–2 mm. long; calyx campanulate-ovoid, slightly stellate-scurfy, about 2 mm. long; style filiform, 6–7 mm. long, scarcely dilated apically.—Not clearly distinct from *M. centrophora* according to Cogn. Near *M. pichinchensis* Benth. Section *Amblyarrhena*. F.M. Neg. 17040.

Cajamarca: Below San Pablo, 2,200 meters, *Weberbauer 3847*, type.

Miconia chrysophylla (L. C. Rich.) Urb. Symb. Ant. 4: 459. 1910; 857. *Melastoma chrysophylla* L. C. Rich. Act. Soc. Hist. Nat.

Paris 109, 1792. *Melastoma fulva* L. C. Rich. in Bonpl. Melast. 23. *pl. 11.* 1816. *Miconia fulva* DC. Prodr. 3: 180. 1828.

Shrub or tree well marked by the ashy or reddish-lepidote indument that clothes the younger acutely angled branches and the leaves beneath, these green and glabrous above, narrowed both ends, sharply acuminate, 3-nerved with also a faint pair of submarginal ones; panicle branches secundly flowered; calyx 1.5 mm. long, subtruncate; petals yellowish, about 1.5 mm. long; connective prolonged, unappendaged; style 3 mm. long.—The upper leaves are usually verticillate, 3–5 cm. broad, 3 to several times longer. Section *Chaenanthera.*

Loreto: Iquitos, *Williams 3660.* Río Nanay, *Williams 1151.* Río Huallaga, *Williams 4809.* Río Marañón, *Killip & Smith 27530.*—Río Acre: 25-meter tree, *Krukoff 5268.* Brazil to Guianas. "Puca mullaca."

Miconia ciliaris Triana, Trans. Linn. Soc. 27: 105. 1871; 737.

Branches slightly scurfy; petioles 1.5–4 cm. long; leaves ovate, caudately acuminate, sparsely setulose above, a little scurfy on nerves and veins beneath, the minutely denticulate margins hispid-ciliate, 5–7-nerved, or slightly 5-plinerved, about 9 cm. wide, often 1.5–2 dm. long; inflorescence with a compact, reddish puberulence; pedicels 2–7 mm. long; calyx campanulate, 3.5–4 mm. long; petals 4–5 mm. long, glabrate; filaments glandular-pilose, the anthers eglandular, the connective simple; ovary 5-celled, glabrous; style glandular pilose, 6–7 mm. long, the stigma subpeltate.—The leaves are slightly cordate at base. Cf. *M. muricata.* Section *Tamonea.* F.M. Neg. 29499.

Junín: Vitoc, *Ruiz & Pavón,* type.

Miconia ciliata (L. C. Rich.) DC. Prodr. 3: 179. 1828; 867. *Melastoma ciliata* L. C. Rich. Act. Soc. Hist. Nat. Paris 109. 1792.

Nearly glabrous shrub usually marked by the slightly serrulate but rather conspicuously ciliate leaf margins, oblong or obovate-oblong leaves, these 3-nerved with an additional pair of faint ones, mostly 8–12 cm. long, 3–7 cm. broad; petioles 1–3 cm. long, often slightly pilose above; calyces sessile, secund, glabrous, 2–2.5 mm. long; petals roseate, about 2.5 mm. long; connective not prolonged; style 2 mm. long.—Var. *congestiflora* (DC.) Cogn. has the flowers clustered on reduced branches. Section *Amblyarrhena.*

San Martín: Tarapoto, *Spruce 4257* (the var.).—Loreto: Conchamaya (*Huber 1451*). Canela Ucsha, *Ule 6737*, var. (det. Pilger). Brazil to Mexico and the West Indies.

Miconia clathrantha [Mart.] Triana, Trans. Linn. Soc. 28: 129. 1871 (name); 918. *Cremanium clathranthum* Mart. ex Triana, l.c., in syn.

Glabrous, with slender, obtusely 4-sided branchlets; petioles 1–3 cm. long; leaves membranous, obovate-oblong, scarcely denticulate, shortly acuminate, very unequal, the larger to about 2 dm. long, 5–10 cm. broad, 3-nerved with an additional pair of faint marginal ones; flowers paniculate, sessile, minute, the obscurely denticulate calyx scarcely 1 mm. long, the petals 0.5 mm. long; style 1 mm. long, the stigma obtuse.—The extremely thin leaves show prominently many veins; the panicles are 5–8 cm. long. Section *Cremanium*. F.M. Neg. 17041.

Huánuco: Cuchero, *Poeppig 110; 1719*, type.—Junín: Pichis Trail, 1,100 meters, *Killip & Smith 26051; 26187* (det. Gl.).

Miconia clavistila Gleason, Bull. Torrey Club 58: 229. 1931.

Similar to *M. stelligera* Cogn.; leaves broadly oblong, narrowed to the rounded or obscurely subcordate base, subentire, 3-nerved but with a submarginal additional pair, the upper surface opaque and glabrous except the minutely stellate-tomentose mid-vein, to 16 cm. long and half as wide; filaments filiform, anthers 4.5 mm. long, connective 2-lobed at base and curved anteriorly into 2 lateral lobes; style straight and slender, 8 mm. long, after anthesis conspicuously enlarged above, the truncate stigma 0.7 mm. in diameter.—Said by author to differ from both *M. barbinervis* and *M. stelligera* "in leaf-form and elongated style" but these differences seem to be scarcely apparent. However in the Mexia collection the trichome-stipes are much shorter, the pubescence thus more compact than in the other species. Section *Eumiconia*.

Loreto: Río Nanay, *Williams 373*, type. Above Pongo de Manseriche, Río Santiago, *Mexia 6240* (det. Gl.).—San Martín: Pongo de Cainarachi, *Klug 2629*.

Miconia coelestis [Pav.] Naud. Ann. Sci. Nat. sér. 3. 16: 245. 1851; 919. *Melastoma coelestis* Pav. ex D. Don, Mem. Wern. Soc. 4: 313. 1823, in syn. *Cremanium coeleste* D. Don, l.c. *Miconia chrysopetala* Naud. l.c. 233.

Allied to *M. clathrantha* but the stouter, at first acutely angled, branches and the nerves beneath of the minutely serrulate-ciliate

leaves early faintly scurfy, becoming glabrous, the sparsely and openly branched inflorescence scurfy-puberulent, glabrate in age; leaves 3-nerved with an additional obscure marginal pair, often 2 dm. long, 7–10 cm. wide, yellowish green (or drying brown), the transverse veins prominent; panicle to 2 dm. long, flowers sessile, yellowish, the often reddish suburceolate calyx 2 mm. long, the yellow petals less than 1 mm. long; style 4 mm. long, the stigma peltate.—In type the leaves are nearly oblong, obovate, 4–6 cm. wide, sometimes only 2 cm. wide, 8 cm. long. Specimens *Klug 635* and *591* from Mishuyacu, very young, apparently might key here; they are especially marked by a minute, seemingly simple pubescence on the veinlets of the leaves beneath. Tree 8 meters high (Mexia). F.M. Neg. 17042.

Huánuco: Chinchao and Chacahuasi, *Ruiz & Pavón*, type. Pampayacu, region Churubamba in dense rain forest, 1,625 meters, *Mexia 8247* (det. Gl.); *Poeppig 1268*.—Junín: Pichis Trail, *Killip & Smith 25924* (det. Gl.). Bolivia.

Miconia comosa Cogn. in Mart. Fl. Bras. 14, pt. 4: 408. 1888; 867.

Similar to *M. ciliata* but the petioles usually only 2–7 mm. long, the branchlets and leaves beneath on the nerves papillose-hirtellous, the marginal ciliation appressed and the floral bracts 3–5 mm. long.—The leaves are entire except for the long but sparse ciliation. Section *Amblyarrhena*. F.M. Neg. 32334.

San Martín: Tarapoto, *Spruce 4438*, type.

Miconia compacta Gleason, Bull. Torrey Club 58: 230. 1931. *M. semota* Markgr. Notizbl. Bot. Gart. Berlin 12: 177. 1934.

Branches terete, densely brown-stellate-tomentose; petioles stout, to 17 mm. long; leaves elliptic, 9–17 cm. long, about half as wide, acute or abruptly acuminate, rounded at base, entire, 3-nerved or 3–5-plinerved, membranous, glabrous above except along the primaries, loosely stellate-pubescent below, especially on the veins; panicle racemiform, tomentose, the 6-merous sessile flowers in terminal glomerules on the short branches, these only 3–5 mm. long; bracts lanceolate, persistent, 2–3 mm. long; calyx about 3.5 mm. long, the stellate trichomes sessile, the broadly ovate reflexed sepals 1.3 mm. long, not rounded but obtuse; filaments glandular, the connective of the larger tuberculate dorsally, shortly produced and glandular basally; ovary 3-celled, glandular; style glabrous, the stigma ovoid, 4 mm. long.—Allied to *M. glomerata* Triana to which

the Tessmann collections were referred at Berlin. Suggests *M. cinchonaefolia* DC., 745, which however has eglandular filaments; subulate anthers. Section *Eumiconia.*

Loreto: Iquitos, *Killip & Smith 26936,* type; *27354; Klug 1050; Tessmann 3648; 3612.*

Miconia consimilis Pilger, Verh. Bot. Ver. Brandenb. 47: 170. 1905.

Compressed younger branches, petioles and inflorescence minutely brown-scurfy-puberulent; petioles 2–3.5 cm. long; leaves elliptical, narrowed at base, gradually acuminate, very membranous, bright green and glabrous except for a minute brown-punctate scurfiness on the 5 nerves beneath, to 2 dm. long, half as broad, loosely reticulate-veined; calyx shortly pedicellate, 2 mm. long; petals 4, yellowish-white, 3 mm. long; anthers lanceolate, slightly attenuate above, 1-pored, 4 mm. long, the connective shortly spurred; ovary free; style to 1 cm. long, the stigma not at all enlarged.—In spite of somewhat pointed anthers, belongs in *Glossocentrum.* F.M. Neg. 17043.

Loreto: Cerro de Escaler, 800 meters, *Ule 6543,* type. Río Nanay, *Williams 689.* Florida, *Klug 1997*(?). "Isula-micuna."

Miconia Cookii Gleason, Phytologia 1: 43. 1933.

Similar to *M. elongata;* petioles slender, 2–3 cm. long; leaves abruptly acuminate to a short cusp, 3-plinerved; calyx subsessile, about 2.5 mm. long, very sparsely and minutely puberulent and brown-punctate, the triangular acute sepals nearly 1 mm. long; petals round-obovate, 2.2 mm. long; connective elevated and laterally lobed; ovary 5-celled, the style 5.5 mm. long, the capitellate stigma barely expanded.—Allied also to *M. monzoniensis* with crowded panicles, shorter petioles, broader leaves, 4-celled ovary, and to *M. Bangii* Cogn. Mem. Torrey Club 3, no. 3: 30. 1893, of Bolivia, the leaves broader, the stigma subpeltate. Apparently is *M. Terera* at least in part. Section *Amblyarrhena.*

Cuzco: San Miguel, Urubamba Valley, 1,800 meters (*Cook & Gilbert 1742,* type).

Miconia corymbiformis Cogn. Bull. Acad. Belg. sér. 3. 14: 964. 1887; 929.

A completely glabrous tree or the leaves with a few scattered and evanescent scales beneath; branches acutely tetragonous or nearly winged; petioles to 4 cm. long; leaves rigid-coriaceous, 1–2 dm. long, 4–9 cm. broad, with 5 thick nerves, oblong or ovate-oblong, rounded

at base, the entire margin lightly revolute; flowers densely corymbed in panicles to 1.5 dm. long, the pedicel 4–8 mm. long; calyx tube 6 mm. long, the lobes broadly rounded, 1.5–2 mm. long; petals yellowish, broadly rounded, 4–5 mm. long, the style 5 mm. long.—A Ruiz & Pavón collection labeled as from Peru was actually obtained at Guayaquil. Section *Chaenopleura*.

Peru (probably). Ecuador; Colombia.

Miconia crassifolia Triana, Trans. Linn. Soc. 28: 125. 1871; 881.

Terete branches, leaves beneath and compact inflorescences even to the calyces (or these glabrate in age) scurfy stellate-tomentose with dark-brown short trichomes; petioles 3–6 mm. long; leaves suborbicular to ovate-oblong, entire or denticulate toward the acute or obtusish apex, fleshy-coriaceous, yellowish and glabrous but granulose-papillate above, 5-plinerved with an additional faint marginal pair, mostly 6 cm. long, 4 cm. broad; pedicels 1–3 mm. long, the calyx 3–4 mm. long; petals suborbicular, 3 mm. long; connective bitubercled posteriorly; style sometimes stellate-puberulent, 4–5 mm. long, the stigma peltate.—The leaf nerves are essentially or quite basal. Two leaf-forms have been named, var. *parvifolia* Cogn. and var. *rotundifolia* Cogn. Section *Amblyarrhena*. F.M. Neg. 25942.

Amazonas: Chachapoyas, *Mathews 1261; 1262; 3216*, types; *Williams 7555* (det. Gl.).

Miconia crassipes Triana, Trans. Linn. Soc. 28: 116. 1871; 781.

Branches obtusely 4-sided; petioles thick, 1–2.5 cm. long; leaves elliptic or elliptic-oblong, acute, auriculate-cordate at base, scarcely denticulate, coriaceous, glabrous above, pale or rusty scurfy-tomentose beneath, the indument compact, 12–18 cm. long, 6–10 cm. broad; flowers glomerate on the subverticillate panicle branches, the ovoid-turbinate calyx 2.5 mm. long; petals retuse, 2–2.5 mm. long; ovary scurfy-puberulent above; style 4–5 mm. long.—Section *Eumiconia*.

Peru: (*Mathews 1300*).

Miconia crassistigma Cogn. Bot. Jahrb. 42: 143. 1908.

Subquadrate branchlets densely scurfy-stellate-puberulent; petioles 1–2 cm. long; leaves firm, oblong, acute, entire but minutely rigid-ciliate-denticulate, glabrous above, sparsely stellate-scurfy, mostly only on the nerves and slightly papillose-punctate beneath, 3-nerved with an additional faint submarginal pair, 4–7 cm. long, 2–2.5 cm. broad; panicle dense; flowers very minute, the calyx only 1.5 mm. long, the white, slightly emarginate petals shorter than 1

mm.; pedicels 0.5–1 mm. long; style filiform, 2 mm. long.—Allied to *M. Mandonii*, 911, of adjacent Bolivia, with petals twice as long, the calyx nearly 4 mm. broad on pedicels 1–6 mm. long. Section *Cremanium*. F.M. Neg. 17044.

Huánuco: Prov. Huamalies, 2,500 meters, *Weberbauer 3407*.

Miconia cremophylla Naud. Ann. Sci. Nat. sér. 3. 16: 228. 1851; 919.

Similar to *M. coelestis;* leaves glabrous above, sparsely brown-punctate-scurfy beneath, 1–1.5 dm. long, 4–5.5 cm. wide, only shortly narrowed at base; petioles 1–2 cm. long; flowers usually ternate; petals 1.5 mm. long; calyx obtusely lobed; style 3–4 mm. long.—In the Peruvian specimens the leaves are subcoriaceous, yellowish green, remotely mucronulate on the margins, caudate-acuminate, with 3 nerves and 2 faint additional ones; the indument is merely a pulverulence. Section *Cremanium*. F.M. Neg. 25944.

Amazonas: Chachapoyas, *Mathews 1297*. Without locality, *Pavón*. Colombia; Bolivia.

Miconia crocea (Desr.) Naud. Ann. Sci. Nat. sér. 3. 16: 245. 1851; 897. *Melastoma crocea* Desr. in Lam. Encycl. 4: 55. 1797.

Nearly glabrous but setose-barbate, usually conspicuously, at base of leaves beneath on the nerves; petioles 1–1.5 cm. long, the younger somewhat setulose; leaves ovate-oblong, obtusely or shortly acuminate, subrotund or acute at base, remotely denticulate, 3–5-nerved or nearly 3-plinerved, the outer nerves thin, 5–6 cm. long, 2.5–3 cm. wide; panicle dense, the flowers 7–8-merous; pedicels 1–2 mm. long; calyx 3–4 mm. long, the minute teeth acute; petals white, 2.5–3 mm. long; style 6–7 mm. long, the stigma subpeltate.—The Ruiz & Pavón collection cited in litt. as Peruvian was collected at Guayaquil. Section *Cremanium*.

Peru: (*Spruce 4971*). Ecuador; Colombia. "Colca," "tiri."

Miconia cuneata [Berg] Triana (name), Trans. Linn. Soc. 28: 113. 1871; 826. *Staphydium cuneatum* Berg ex Triana, l.c., in syn.

Branches, petioles and panicles densely long-hirsute, the longer trichomes 2 mm. long, 3–5-stellately branched at tip; petioles exceptionally stout, 0.5–1.5 cm. long; leaves oblong-lanceolate, long-ciliate and slightly undulate-denticulate, long-acuminate, sparsely setulose above, densely hirsute especially on the 3–5 nerves beneath, the trichomes many-parted at apex, the larger leaves 1.5–2 dm. long, 5–9 cm. broad, the opposite leaf usually distinctly smaller; panicle

3–8 cm. long; calyx 3 mm. long, sessile; petals 2 mm. long; style 5–6 mm. long.—Section *Eumiconia*. F.M. Neg. 17045.

San Martín: Río Tocache, *Poeppig 2046; 2047*, types.

Miconia cuspidata [Mart.] Naud. Ann. Sci. Nat. sér. 3. 16: 163. 1851; 809. *Oxymeris cuspidata* Mart. ex Triana, Trans. Linn. Soc. 28: 109. 1871.

Branches nearly terete, the younger petioles, leaves beneath and calyces minutely scurfy-puberulent, the indument evanescent except in the panicles, these 5–7 cm. long; petioles 4–6 mm. long; leaves oblong-lanceolate, entire, submembranous, strikingly acuminate, the acumen slender or nearly filiform, drying black and lustrous, 6–10 cm. long, 1.5–3 cm. broad; pedicels 2–3 mm. long; calyx tube 2 mm. long, the lobes 0.5 mm. long; petals about 3 mm. long; connective shortly spurred posteriorly, minutely biauricled anteriorly; style truncate at apex, 5–6 mm. long.—Section *Eumiconia*. F.M. Neg. 17047.

Peru (probably). Amazonian Brazil.

Miconia cyanocarpa Naud. Ann. Sci. Nat. sér. 3. 16: 221. 1851; 899.

Allied to *M. caerulea;* branches slender, shortly (typically) and densely hirsute; petioles to 3 cm. long; leaves ovate, more or less acuminate, rounded at base, thin and very green but hirtellous on both sides, more loosely so beneath, 5–7-nerved, 8–15 cm. long, usually half as wide; flowers densely glomerate, the clusters often continuous; calyx obviously dentate, 1.5 mm. long; petals scarcely 1 mm. long; fruit blue, 3 mm. thick.—The var. *hirsuta* Cogn. is densely long-hirsute on the branches. Section *Cremanium*.

Junín: San Ramón, *Killip & Smith 24690* (det. Gl.). Chanchamayo Valley, *Schunke 1739; 395*.—Puno: Sandía Valley, *Weberbauer 1067* (det. Cogn.); 278. Without locality (*Haenke*). Bolivia.

Miconia decurrens Cogn. Bol. Mus. Goeldi 5: 253. 1909.

Similar to *M. aureoides;* leaves membranous, broadly lanceolate, long-acuminate, 5–7-plinerved, glabrous both sides but pale beneath, 18–25 cm. long, 5–8 cm. broad; lacerate calyx segments finally caducous, the calyx tube 2.5–3 mm. long, the membranous limb 1.5–2 mm. long; petals white, only about 2 mm. long; stigma punctiform.—Petioles winged nearly to base by the decurrent leaf blade. Section *Laceraria*.

Loreto: Iquitos, in woods (*Ducke 7603*, type).

Miconia densifolia Cogn. Bot. Jahrb. 42: 145. 1908.

Allied to *M. cremophylla* but entirely glabrous and the branches acutely 4-sided or narrowly winged; petioles 4–8 mm. long; leaves narrowly oblong, narrowed to an obtuse base, 6–8 cm. long, 1.5-nearly 2.5 cm. broad, remotely callous-denticulate, 3-nerved; calyx about 1 mm. long, sessile, its lobes acute; flowers minute, the petals about 0.5 mm. long, aggregate; style extremely short, the stigma subpeltate.—Section *Cremanium*. F.M. Neg. 17048.

Huánuco: Prov. Huamalies, 2,500 meters, *Weberbauer 3404*, type. Playapampa, *4859*(?) (in fruit).

Miconia dipsacea Naud. Ann. Sci. Nat. sér. 3. 16: 138. 1851; 775.

Allied to *M. amplexicaulis* but the more rigid, nearly oblong 3-nerved leaves auriculate-cordate and densely stellate-tomentose beneath; calyx 3 mm. long, shortly 5-lobed, the pubescence persisting; petals rounded at apex, 3 mm. long; style 5–6 mm. long, the stigma subpeltate.—Compact shrub or tree to 5 meters high. Section *Eumiconia*. F.M. Neg. 17007.

Huánuco: Cueva Grande, *4790*. Pozuzo, *4707;* Valley of the Monzón, 900 meters, *Weberbauer 3480* (det. Cogn.); 284. Pampayacu, *Kanehira 110;* Cuchero, *Poeppig 176*. Chinchao, *Ruiz & Pavón* (det. Markgr.). Casapi, *Mathews 1722*.—Junín: La Merced, *5541*. Chanchamayo Valley, *Weberbauer 2016* (det. Cogn.); 247.—Ayacucho: Prov. Huanta, *Weberbauer 5647* (det. Cogn.).—Cuzco: Valle de Lares (*Herrera 800*). Río Chaupimayo, *Soukup 506*, in part. "Ppuiño-ppuiño."

Miconia dispar Benth. in Hook. Journ. Bot. & Kew Misc. 2: 241. 1850; 791.

Branches densely and shortly tomentose-puberulent with plumose trichomes; petioles 4–5 sided, 2–4 cm. long; leaves obscurely undulate-crenulate, ovate-oblong, smooth above, often drying black, fulvescent beneath with a dense pubescence of stellate trichomes, 5-nerved, 2–3.5 dm. long, 9–18 cm. broad; panicle 1–2.5 dm. long, the short lateral branches opposite and mostly trifid, the flowers sessile and secund on these 3 forks; calyx shortly toothed, about 2.5 (–3.5) mm. long; petals pale rose-color, 3 mm. long; style 6–7 mm. long; anthers 3–3.5 mm. long; connective produced, minutely gibbous posteriorly, obscurely bilobed anteriorly.—Tree to 10 meters high. Section *Eumiconia*. F.M. Neg. 17051.

Junín: Chanchamayo Valley, *Schunke 303; A. 121*.—Cuzco: Río Chaupimayo, *Soukup 506*, in part. Brazil.

Miconia dodecandra (Desr.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 243. 1887; 740. *Melastoma dodecandra* Desr. in Lam. Encycl. 4: 46. 1797.

Candelabra-branched shrub or small tree, the younger branches, petioles, leaves beneath and panicles densely stellate-puberulent or tomentose; petioles elongate; leaves firm, ovate, shortly acuminate, somewhat rounded at base, usually 5-nerved, 12–18 cm. long, 6–7 cm. broad; pedicels 4–10 mm. long, the geminate, obtuse, involucrate but caducous bracts 6–7 mm. long; flowers mostly 6-merous; calyx 5–6 mm. long; petals thick, 7–8 mm. long; connective slightly gibbous dorsally; style glabrous below.—The calyx is distinctly lobed and persistently ashy-tomentose. *Mexia 6454* has a pubescent style. Section *Tamonea*.

Loreto: Mouth of Santiago, in dense forest, *Mexia 6192* (det. Gl.). Río Napo, *Mexia 6454* (det. Gl.).—Junín: La Merced, *Killip & Smith 23920* (det. Gl.); *Schunke 1827*.—San Martín: Moyobamba, *Woytkowski 29*. Brazil to Mexico and the West Indies. "Calsoncillo."

Miconia dolichorrhyncha Naud. Ann. Sci. Nat. sér. 3. 16: 166. 1851; 859.

Branches scurfy-tomentose; petioles about 1 cm. long; leaves oblong, rounded at base, very long-caudate-acuminate, minutely reddish-stellate-hirtellous beneath, 5-nerved, 1.5–2 dm. long, 5–7 cm. broad; panicles about 1 dm. long, the pedicels mostly 1–2 mm. long; calyx 1.5–2 mm. long; petals obtuse, 2 mm. long; anthers 2-cleft, the long-produced connective spurred posteriorly; style 3 mm. long; fruits yellow.—Section *Chaenanthera*. F.M. Neg. 36292.

Junín: Pichis Trail, *Killip & Smith 25889*. La Merced, *5589*.—San Martín: Moyobamba, *Mathews 9291*, type.—Loreto: Río Paranápura, *Klug 3934*. Bolivia.

Miconia Donaeana Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851 (name); 738. *Chitonia caudata* D. Don, Mem. Wern. Soc. 4: 317. 1823, not *M. caudata* DC.

Branches, as the 5 leaf nerves beneath, slightly minutely scurfy; petioles 4–7 mm. long; leaves ovate, or nearly rotund, more or less abruptly, narrowly and sharply caudate, glabrous above, 1.5–3 dm. long, 1–2 dm. wide; flowers sessile or subsessile, bibracteate, the bracts 2–4 mm. long, promptly caducous; calyx about 3 mm. long, densely scurfy-tomentose, obscurely lobed; petals roseate, 4 mm. long; filaments and connective densely glandular-puberulent; style

10–12 mm. long, the stigma peltate.—Small shrub or tree (Schunke). Section *Tamonea*. F.M. Neg. 17052.

Junín: Chanchamayo Valley, *Schunke 282; 338*.—Huánuco: Cuchero, *Ruiz & Pavón; Dombey; Poeppig 1213*. Chinchao, *Ruiz & Pavón*.—San Martín: San Roque, *Williams 7002; 7055* (det. Gl.). "Muena-mullaca," "nucñu mullaca."

Miconia Duckei Cogn. Bol. Mus. Goeldi 5: 254. 1909.

Younger parts, as the leaves beneath, at least on the 5 nerves shortly and densely stellate-tomentose, the nerves basal or nearly, or 3 distinctly above the leaf base; petioles slender to 3.5 cm. long; leaves elliptic-obovate, obtuse at base, apically obtusish to shortly acuminate, entire or crenulate, membranous, pale green above and finally glabrous, minutely and rather sparsely stellate-pilose beneath, 15–17 cm. long, 8–10 cm. broad; panicle 2–6 cm. long, the flowers sessile, densely congested, or in nearly continuous glomerules or these rarely at the ends of branchlets; calyx ashy-hirtellous, the lacerate limb puberulent, about 2 mm. broad, about as long; petals white, narrowly obovate, to 2 mm. long; anthers eglandular; style filiform, glabrous, 5 mm. long, the stigma punctiform.—The following material was distributed as *M. capitata*, a species with different calyx. The type has 5-nerved, nearly entire, obtusish leaves, but apparently the leaves vary as described here. Section *Laceraria*. F.M. Neg. 25952.

Loreto: Iquitos, in woods (*Ducke 7586*, type); *Killip & Smith 27284; Williams 1327; 1338*. Pebas, *Williams 1634*. La Victoria, *Williams 2993*.

Miconia dumetosa Cogn. Bot. Jahrb. 42: 144. 1908.

Densely branched shrub 2 meters high, the slender branches, as the 3 leaf nerves beneath, stellate-puberulent; petioles 1–3 mm. long; leaves coriaceous, obovate-oblong, basally acute, obtuse, in age glabrous above, 1.5–2.5 cm. long, 7–13 mm. broad; panicle dense, to 2.5 cm. long; flowers sessile or subsessile, 5-merous; calyx campanulate-ovoid, slightly scurfy, 1.5 mm. long, the minute teeth acute, petals scarcely 0.5 mm. long; style glabrous, 1.5 mm. long, the stigma peltate.—Near *M. loxensis* (Bonpl.) DC. Section *Cremanium*. F.M. Neg. 17053.

Amazonas: Tambo Ventillas, 2,400 meters, east of Chachapoyas, *Weberbauer 4389*, type.

Miconia egensis Cogn. in Mart. Fl. Bras. 14, pt. 4: 374. 1887; 849.

Branches obtusely quadrate, often somewhat 4-sulcate, the younger minutely stellate-scurfy; petioles about 1 cm. long; leaves ovate or ovate-oblong, acutely acuminate, acute or obtuse at base, glabrous except for a minute scurfy puberulence on the leaf-nerves beneath, this evanescent, more prominent in the inflorescence, to 2.5 dm. long, 1–1.5 dm. broad, 3 (–5)-nerved or shortly plinerved, the outer pair faint; panicles 1 dm. long, the crowded flowers sessile or subsessile; calyx 2 mm. long, scarcely lobed, the limb caducous; petals 2 mm. long; stamens subequal, filaments glabrous; connective shortly produced but simple; style 5 mm. long, clavate or subpeltate above.—Three-meter tree with white flowers (Klug). Section *Glossocentrum.* F.M. Neg. 17054.

Loreto: *Williams 1637; 2703* (det. Gl.). Florida, *2258* (det. Gl.). Brazil. "Acaño-fue-paroe," "huirima-ey" (Huitoto).

Miconia elaeagnoides Cogn. in Mart. Fl. Bras. 14, pt. 4: 390. 1887; 858. *Miconia dichrophylla* Macbr. Field Mus. Bot. 4: 189. 1929(?).

Branches acutely tetragonous, often strongly flattened toward the tip, the younger with the petioles, peduncles and panicles densely squamulose-pubescent; leaves membranous or rather firm, opposite, oblong-ovate or oblong-lanceolate, mostly 1.5 dm. long, 5 cm. broad, sometimes apparently twice as large, acute at base, acuminate, green and glabrous above, densely silvery or rusty-lepidote beneath, 5-plinerved; flowers 5-merous, sessile; calyx campanulate, about 2 mm. long, minutely triangular-dentate; petals suborbicular, about 1.5 mm. long, glabrous; anthers oblong-linear, the terminal pore moderately wide, the connective obscurely prolonged at base, minutely bicalcarate on both sides; style truncate, short.—Description largely from the type of *M. dichrophylla;* Gleason, Bull. Torrey Club 58: 242, is probably correct in suggesting that only one species is concerned, the Cogniaux specimens being young, and the sepals probably are not truly "linear-subulate." Section *Eumiconia,* fide Gleason. F.M. Neg. 25953.

Junín: Slender tree, La Merced, *5495* (type, *M. dichrophylla*); *Killip & Smith 26379* (det. Gl.).—San Martín: *Williams 5891; 6421; 6472; 6586* (det. Gl.).—Loreto: *Williams 4886* (det. Gl.). Bolivia; Brazil. "Ubiamba."

Miconia elongata Cogn. Bull. Torrey Club 17: 91. 1890; 874.

Glabrous shrub with rather acutely tetragonous branches, and thin lanceolate leaves, narrowed to base and decurrent on the peti-

oles, these to 1 cm. long or longer; leaves 3-nerved with an additional marginal pair, 1–2 dm. long, 3.5–5 cm. broad; panicle 7–8 cm. long; pedicels 1–2 mm. long, medially articulate; calyx ovoid, 1.5 mm. long; petals white, obovate, less than 1 mm. long; style 2–2.5 mm. long, the stigma peltate.—Section *Amblyarrhena*. Shrub 3 meters high (Klug).

Loreto: Pumayacu, *Klug 3223* (det. Gl.). Bolivia.

Miconia eriocalyx Cogn. in Mart. Fl. Bras. 14, pt. 4: 342. *pl. 69*. 1887; 823.

Branches subterete, evanescently tomentose; petioles 2–5 cm. long; leaves minutely crenulate, ovate, cordate at base, acuminate, glabrous above, rusty-stellate beneath, 2–3.5 dm. long, 1–2 dm. broad, 5-nerved, thick and rigid; flowers crowded on the white stellate-tomentose panicle branches; calyx densely tomentose, about 3 mm. long, the glabrous petals as long, the style at least twice as long; stamens subequal, the scarcely produced connective obscurely biauricled anteriorly, scarcely little gibbous posteriorly.—The inflorescence branches are often clothed with a deep felt-like indument. A tree 8–10 meters high (Killip & Smith). Section *Eumiconia*. F.M. Neg. 32335.

San Martín: Tocache, *Poeppig*.—Loreto: Yurimaguas, *Killip & Smith 27593* (det. Gl.). Brazil.

Miconia erioclada Triana, Trans. Linn. Soc. 28: 111. 1871; 814.

Branches subterete, rather densely to conspicuously long-hirsute-villous, the trichomes simple, some a little barbellate basally; petioles 0.5–2 cm. long; leaves unequally dentate, sometimes obscurely, elliptic-oblong, subrotund at base, acuminate, more or less, often sparsely, appressed-pilose both sides, 5-nerved, 1–2.5 dm. long, 5–10 cm. broad; panicle narrow, few-flowered; bractlets 2–3 mm. long; calyx to 3 mm. long, distinctly 5-lobed; petals white, 2 mm. long, connective obscurely bituberculate; style 5 mm. long.—Common at altitudes of less than 700 meters (Gleason). Section *Eumiconia*. F.M. Neg. 32336.

Junín: La Merced, sandy brushy river flat, 1-meter bush, *5546; Killip & Smith 23469*.—Huánuco: Cuchero, *Ruiz & Pavón; Poeppig 1049; 1451; 1673*.—San Martín: Tarapoto, *Spruce; Williams 6758* (det. Gl.).—Loreto: Yurimaguas, *Poeppig; Williams 294; 3210; 4940; 4999* (all det. Gl.). Río Itaya, *Killip & Smith 29504*. Soledad, *Killip & Smith 29554*.—Cuzco: Paucartambo, *Soukup 385* (det. Standl.). Brazil; Bolivia.

Miconia eugenioides Triana, Trans. Linn. Soc. 28: 109. 1871; 811.

Branches terete, the younger densely yellowish stellate-scurfy-pulverulent; petioles 1 cm. long; leaves firm, lustrous, ovate or oval-elliptic, caudate-acuminate, entire, glabrous or minutely stellate-puberulent on the 5 nerves beneath, 2 of these fainter, to 12 cm. long, 7 cm. broad, often smaller; panicles broad, to 1 dm. long; pedicels 2–3 mm. long; calyx 1.5–2 mm. long, glabrous above; petals acute, 3 mm. long; connective anteriorly bituberculate, posteriorly produced into a short, truncate appendage; style 5–6 mm. long.—Six meters high, with white flowers. Suggests *Leandra* in acute petals. Section *Eumiconia*. Illustrated, Mart. Fl. Bras. 14, pt. 4, *pl. 65*.

Loreto: La Victoria, *Williams 2966* (leaves narrower than type, Gl.). Florida, *Klug 2142* (det. Gl.). Brazil. "Uifiguiray."

Miconia expansa Gleason, Bull. Torrey Club 63: 536. 1936.

Nearly glabrous shrub 3 meters high, the upper branches exactly 4-angled; petioles stout, the upper 2–3 cm. long; leaf blades ample, membranous, obovate-oblong or broadly elliptic, shortly and abruptly apiculate, entire but sparsely glandular-ciliate, broadly cuneate at base, 5-plinerved; panicle ample, glabrous unless obscurely scurfy at nodes, the branches all evidently dilated above and strongly 4-winged; calyx campanulate, glabrous, 4 mm. long, the broadly ovate sepals 2 mm. long and nearly as broad, minutely glandular-setose at tip; petals fleshy, white, nearly 5 mm. long, 4 mm. wide; filaments sparsely glandular as connective near the base; style very stout, about 5.5 mm. long, the capitate stigma nearly 2 mm. broad; ovary inferior, 5-celled, costate apically.—Section *Amblyarrhena*.

Loreto: In forest at Pumayacu, 600–1,200 meters, *Klug 3201*, type.

Miconia falcata Cogn. Bot. Jahrb. 42: 139. 1908.

Apparently scarcely distinct from *M. dipsacea;* leaves arcuate-falcate, 7-nerved; panicle branches branched; stigma scarcely dilated, the filiform style 5–6 mm. long.—Calyx 2 mm. long; 5-meter shrub, the branches very stout. Section *Eumiconia*. F.M. Neg. 17058.

Cuzco: Santa Ana, Prov. Convención, 1,500 meters, *Weberbauer 4998*.

Miconia fallax DC. Prodr. 3: 181. 1828; 788.

Very similar to *M. argyrophylla;* leaves obtuse or shortly and obtusely acuminate; petals rounded or subretuse, glabrous, 3.5–4

mm. long; connective below the cells not or scarcely produced, minutely tuberculate posteriorly; style 7–9 mm. long; fruit broadly subglobose, 10-sulcate, 5–6 mm. thick.—Section *Eumiconia*.

Junín: San Ramón (*Killip & Smith 24775*, "an abnormal form with longer leaves"—Gleason). Paraguay to the Guianas.

Miconia filamentosa Gleason, Bull. Torrey Club 65: 579. 1938.

Upper branches terete, slender, finely stellate-puberulent, as the petioles, leaves beneath on the veins and the panicles, including the calyces; leaves oblong-lanceolate, narrowed to the minutely cordate base, often conspicuously crenate, narrowly acuminate, 3-nerved or nearly 3-plinerved, glabrous above, to 12 cm. long, 3 cm. broad; panicle 6–8 cm. long and broad, the 5-merous flowers sessile in 3-flowered cymes but the lateral flowers apparently pedicellate; calyx about 2 mm. long, the rounded or acute sepals 0.5 mm. long; petals scarcely retuse, glabrous, 3 mm. long; stamens dimorphic, the slender filaments 4.6 or 2.3 mm. long; connective of larger stamens nearly enclosing the filaments by its extended oblique rounded lobes, of the smaller, produced with one dorsal and two lateral nodes; ovary 4-celled; style slender, glabrous, 5.5 mm. long, the stigma minutely capitate.—Probably nearest *M. Sprucei* Triana. Section *Eumiconia*.

Loreto: Mishuyacu, near Iquitos, *Klug 938*, type. Río Itaya, *Williams 3306*, in fruit, the leaves less crenate, the panicle to 2 dm. long. Río Mazán, *Schunke 160;* Río Itaya, *Williams 3298*. Brazil.

Miconia firma Macbr., spec. nov.

Ramis robustis superne acute 4-angulatis et sulcatis demum solum quadratis glabris; petiolis supra sulcatis minute hirsutis apice tuberculo-dilatatis ad 4 cm. longis; foliis ovato-ellipticis, basi rotundatis, breviter acuminatis, integris, 5-nerviis, supra planis, sparse scabro-setulosis ut videtur glabratis, subtus dense fulvo-hirsutis, ad 23 cm. longis fere 10 cm. latis rigide coriaceis; paniculis glabratis vel sparse minuteque hispidulis, dense multifloris, 14 cm. longis, ad 5.5 cm. latis; floribus 4-meris; pedicellis circa 1 mm. longis; calyce campanulato, glabro, obscure lobato, circa 1.5 cm. longo; petalis late oblongo-ellipticis, glabris, obtusis fere 2.5 mm. longis, staminibus glabris; filamentis 1 mm. longis, antheris fere oblongis vel vix obovoideis, 1.5 mm. longis, poris 2 dehiscentibus, connectivo simplice; stylo 2.5 mm. longo, stigmate subpeltato; ovario libero valde costato.—Ovary completely free and strongly ribbed as in few species.

Cajamarca: *Weberbauer 6389*, type.

Miconia flaccida Gleason, Bull. Torrey Club 58: 226. 1931.

Branches and panicle-branches acutely 4-angled and narrowly winged, glabrous as the entire plant unless finely scurfy at the nodes and on the calyx and petals without; petioles slender, 2–3 cm. long; leaves thin, pale-green, narrowly elliptic, 2.5–3.5 dm. long, 6–7 cm. wide, long-cuneate at base, long-acuminate, entire, 3-plinerved; panicle ample, the flowers sessile or subsessile, 5-merous, calyx tubular-campanulate, about 3.5 mm. long, the broadly triangular sepals acute; petals 4 mm. long, strongly inequilateral, deeply retuse; stamens about 15, isomorphic; filaments glabrous, 4 mm. long; anthers stoutly subulate, nearly straight, the connective not produced or appendaged; ovary 5-celled, glabrous as the style, this slender, 7 mm. long, the stigma capitate.—Shrub 2–3 meters high, the winged stems hollow; the stamens suggest those of *Tococa* (Gleason). Section *Tamonea*.

Junín: Pichis Trail, 1,600 meters, *Killip & Smith 25625*.

Miconia flaviflora Gleason, Bull. Torrey Club 63: 534. 1936.

Allied to *M. acuminifera*, but the leaves oblong-ovate, 10–15 (30) cm. long, 3.5–5.5 (9) cm. broad; irregular calyx lobes about 0.5 mm. long; petals narrowly oblong-obovate, obtuse, 3.5 mm. long, 1.2 mm. broad, reflexed at anthesis, minutely puberulent without; filaments glabrous, the anthers nearly isomorphic, the connective only of the smaller minutely 3-lobed basally.—Early collections in bud were referred to *M. acuminifera*, but flowering material shows that the petals are only half as long as in that species, the calyx much more deeply lobed (Gleason). Suggests *M. cremophylla* which may not be correctly placed. Section *Tamonea*.

San Martín: Near Moyobamba, *Klug 3697*, type; (*Williams 7421*, det. Gl.).—Junín: Near La Merced, *Killip & Smith 24000; 25575; 25997* (det. Gl.). Costa Rica.

Miconia floccosa Cogn. Bot. Jahrb. 42: 140. 1908.

Branches obtusely quadrate, densely clothed, as the leaves beneath, with a felt-like stellate tomentum; petioles 0.5–1.5 cm. long; leaves rigid, thick coriaceous, oblong-lanceolate, shortly narrowed at base and apex, soon glabrate above, 3-nerved, but the marginal pair nearly concealed in the tomentum, 7–11 cm. long, 2–3 cm. wide; panicle 6–10 cm. long, the sessile aggregate calyces 4–5 mm. long; petals rigid, obtuse, 5 mm. long, glabrous; style glabrate, 4–5 mm. long, the stigma little enlarged.—Allied to *M. lanata* Triana. Section *Eumiconia*. F.M. Neg. 17059.

Junín: West of Huacapistana, 3,200 meters, *Weberbauer 2200*, type.

Miconia fruticulosa Cogn. Bot. Jahrb. 42: 146. 1908.

Completely glabrous shrub 0.5 meters high, the slender upper branches acutely tetragonous; petioles 4–10 mm. long; leaves coriaceous, spinulose-serrate, ovate-cordate, shortly acuminate, 3-nerved, 2.5–4.5 cm. long, 13–26 mm. broad; panicles 2–5 cm. long, the 4-merous flowers on pedicels 3–5 mm. long; calyx tube 4 mm. long, the obtuse lobes 1.5 mm. long, denticulate below the tip; petals yellowish white, thick, rounded and shortly apiculate, 5 mm. long; filaments strongly compressed, 2.5 mm. long; style glabrous, filiform, 5–6 mm. long, the stigma capitate.—Allied to *M. epiphytica* Cogn. Section *Chaenopleura*. F.M. Neg. 17064.

Huánuco: Above Monzón, 3,400 meters, *Weberbauer 3383*, type.

Miconia galactantha Naud. Ann. Sci. Nat. sér. 3. 16: 245. 1851; 918. *M. serrulata* [Pavón] Triana, Trans. Linn. Soc. 28: 129. 1871, not Naud. *Melastoma serrulata* Pav. ex D. Don, Mem. Wern. Soc. 4: 314. 1823, in syn. *Cremanium serrulatum* D. Don, l.c.

Near to *M. clathrantha* but early scurfy, especially on the nerves beneath, and the closely net-veined, minutely serrulate, oblong-elliptic leaves much firmer, acute, 6–11 (13) cm. long, 1.5–3 (3.5) cm. broad, on petioles only 1 cm. long; calyx shortly and obtusely lobed, 1.5 mm. long; petals nearly 1 mm. long, retuse. Small flower-fascicles almost contiguous. *Weberbauer 5585*, referred by Cogn. to *M. polyneura*, is rather this species according to Gleason in herb., but the flowers, even though young, seem to be larger, and mostly pedicellate. Section *Cremanium*. F.M. Neg. 17165.

Huánuco: Chinchao & Cuchero, *Ruiz & Pavón*, type. Yanano, *3744; 4924*(?) (in fruit).—Junín: Chanchamayo Valley, *Schunke 169*.

Miconia glaberrima (Schlecht.) Naud. Ann. Sci. Nat. sér. 3. 16: 243. 1851; 916.

Completely or essentially glabrous slenderly branched shrub, the upper branches obtusely tetragonous; petioles to 3.5 cm. long; leaves rather firm, ovate-oblong, shortly acuminate, obtuse or acutish at base, entire or nearly, about 1 dm. long, 3–5 cm. broad, 3-nerved; panicle often much less than 1 dm. long; calyx subhemispheric, 1.5 mm. long, minutely toothed; petals 1 mm. long; style 1–3 mm. long; fruit white.—The Peruvian plant is var. *australis* Macbr. Field Mus. Bot. 4: 184. 1929, the leaves abruptly obtuse at base or even subemarginate, panicles 3–4 cm. long, sparsely and extremely minutely

scurfy-puberulent; calyx teeth little obvious; is perhaps *M. theaezans*, but the anthers are 2-pored. Section *Cremanium*. F.M. Neg. 17067.

Junín: Hacienda Schunke, La Merced, open shrub 1–2 meters high, *5769*, type (var.); *5771*. Mexico and Central America.

Miconia glaucescens Triana, Trans. Linn. Soc. 28: 115. 1851; 830.

Upper branches slightly compressed, puberulent; leaves obovate-lanceolate, decurrent into the 3–6 mm. long petiole, caudate-acuminate, green above, pale and puberulent beneath with slender appressed trichomes on the nerves, these 3, with a very faint marginal additional pair, 10–17 cm. long, 3–6 cm. broad; panicle narrow, lax, to 1.5 dm. long, the sessile flowers ternate; calyx oblong or subcampanulate, acutely dentate, 2.5–3 mm. long, glabrate; petals 1.5 mm. long, obtuse; anthers subulate, unappendaged; style 4–6 mm. long.—The mature leaves are only and minutely brown-lepidote-pubescent beneath, a little plinerved by reason of the decurrent base. Section *Eumiconia*. F.M. Neg. 17068.

Puno: San Gabán, *Lechler 2402*, type.

Miconia glandulifera Cogn. Melast. 737. 1891.

Resembles *M. ciliaris* Triana but petioles 2–3 cm. long, leaves 5-nerved and glabrous above, calyx rather more densely scurfy-tomentose, about 3 mm. long, the lobes somewhat irregular; petals scurfy-puberulent without, anthers glandular below.—Cf. *M. muricata*, which is probably the earlier name. Section *Tamonea*. F.M. Neg. 25962.

Huánuco: Casapi, *Mathews 1728*, type.—Junín: Pichis Trail, *Killip & Smith 25451*. Perené Bridge, *25373* (det. Gl.).—Loreto: Yurimaguas, *Williams 4100* (det. Gl.).

Miconia glomerata Triana, Trans. Linn. Soc. 28: 110. 1871; 776.

Upper branches densely stellate-tomentose; petioles stout, 1–3 cm. long; leaves oblong-lanceolate, cordate, gradually acute, glabrous and light green above, as also beneath in age, or there scurfy on the nerves and drying brown, 3-nerved with an additional very faint marginal pair, 1–3 dm. long, 7 cm. wide; flowers densely capitate-glomerate at the ends of the short simple panicle branches, the glomerule often occupying the entire branch; fruiting calyx 3 mm. long, the lobes broadly rounded, two-thirds mm. long.—Cf. *M. Martiniana* and note. F.M. Neg. 29501.

Huánuco: Chinchao, *Ruiz & Pavón*, type. San Antón, *Née*.

Miconia glutinosa Cogn. Bot. Jahrb. 42: 141. 1908.

Similar to *M. alypifolia* but the branches broadly 4-winged, the younger with the petioles, peduncles and calyces glutinous; leaves obtuse at base, densely appressed-tomentose beneath, 6–10 cm. long, 3–4.5 cm. broad; calyx limb subtruncate.—Section *Amblyarrhena*. F.M. Neg. 17070.

Puno: Between Sandía and Chunchusmayo, 2,400 meters, *Weberbauer 1325*, type.

Miconia grandifolia Ule, Notizbl. Bot. Gart. Berlin 6: 359. 1915.

Glabrate shrub or tree, only the younger parts with the leaf nerves beneath and the ample panicles obscurely and most minutely stellate-pulverulent; leaves subsessile, firm or subcoriaceous, even to 4 dm. long and half as wide, elliptic or ovate-elliptic, shortly cuspidate-acuminate, amplexicaul at base, entire or repandly margined, shortly plinerved, 3 nerves prominent with 2 fainter submarginal ones; flowers sessile, 5-merous, calyx tube oblong-urceolate, the triangular teeth acute, the former 3 mm., the latter 0.5 mm. long; petals white, 3 mm. long, 2 mm. broad; anthers nearly equal, linear, the connective anteriorly tuberculate-lobed; style thick, 3.5 mm. long, the stigma capitate. Apparently nearly *M. pandurata*. Section *Eumiconia*.

Loreto: Leticia, *Ule 6207*, type. Brazil.

Miconia granulosa (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 218. 1851; 910. *Melastoma granulosa* Bonpl. Melast. 25. *pl. 12*. 1816.

Branches stout, obtusely tetragonous, young panicles and petioles granular puberulent; petioles 1–3 cm. long; leaves oblong-ovate, 3-nerved, rounded at base, acuminate, glabrous above, more or less densely granular-tomentose beneath with bright brown trichomes, 10–15 cm. long, 3–5 cm. wide, thick-coriaceous; flowers sessile, congested, calyx scurfy, shortly toothed, 2.5 mm. long; petals white or roseate, 1 mm. long; style 4 mm. long, the stigma obtuse.—The leaf-pubescence is soon partly deciduous. Section *Cremanium*. F.M. Neg. 36260 (in part).

Peru (probably). Bolivia; Colombia.

Miconia Grayana Cogn. Melast. 896. 1891.

Glabrous, with slender, elongate, subterete branches that are supplied at the nodes with membranous sleeve-like stipules; petioles 1–2 cm. long; leaves rather firm, remotely subulate-denticulate, lanceolate, shortly acuminate, acute at base, 3-plinerved, the nerves

deeply impressed above, 5–9 cm. long, 1.5–3 cm. wide; panicles 4–6 cm. long, the flowers 6-merous on pedicels 2–4 mm. long; calyx campanulate, slightly constricted below the middle, narrowly and acutely but shortly 6-dentate, 4 mm. long; petals 2 mm. long; stamens 12; style 6 mm. long, the stigma capitate.—Section *Amblyarrhena*.

Peru(?): *Grisar*, type.

Miconia Griffisii Macbr. Field Mus. Bot. 4: 188. 1929.

Branches soon terete, densely setulose-hirtellous, with only simple trichomes; petioles 7–12 mm. long; leaves subcoriaceous, ovate-lanceolate, acute or shortly acuminate, rounded or subacute at base, glabrous above, sparsely hirtellous on the 3 nerves and veins beneath, mostly 8 cm. long, 3–3.5 cm. broad; panicles densely flowered, about 1 dm. long; flowers 4-merous, on pedicels 5 mm. long; calyx turbinate-campanulate, glabrate, 4 mm. long, distinctly lobed, the lobes subrotund, the outer teeth reduced to tubercles; petals white, suborbicular, about 3 mm. long; style 5–6 mm. long, the stigma peltate.—There is an outer pair of marginal nerves. Shrub 1–1.5 meters high, named for C. N. Griffis, of Lima. *M. pichinchensis* Benth., collected by Ruiz & Pavón from Guayaquil, somewhat similar, has thin, subsessile leaves. Section *Chaenopleura*.

Huánuco: Tambo de Vaca, *4382*, type.

Miconia grisea Cogn. Bot. Jahrb. 42: 147. 1908.

Much-branched shrub related to *M. chionophila* Naud., the branches densely scurfy with minutely barbellate, rather long trichomes, the leaves slightly stellate-scurfy especially on the 3 nerves beneath, 1.5–2 cm. long, 8–16 mm. broad; petioles 3–6 mm. long; panicle little if at all branched, the few to many flowers nodding on arcuate pedicels 2–4 mm. long; petals white, 3 mm. long; style glabrous, 4 mm. long, the stigma punctiform.—There is an additional pair of submarginal nerves barely noticeable in the larger leaves. Section *Chaenopleura*. F.M. Neg. 17071.

Huánuco: Near Monzón, 3,400 meters, *Weberbauer 3346*, type.

Miconia guianensis (Aubl.) Cogn. Jahrb. Bot. Gart. Berlin 4: 280. 1886; 741. *Tamonea guianensis* Aubl. Pl. Guian. 2: 658. 1775.

Branches densely scurfy-pulverulent, soon glabrate; petioles elongate; leaves subcoriaceous, oblong-ovate, acuminate, glabrous above, usually rather thinly stellate-tomentulose beneath, the trichomes minute, 3–5 (–7)-nerved; inflorescence ample, the fascicled short branches that simulate pedicels flattened or quadrate, the

sessile flowers subtended by 2 obovate bracts 6–11 mm. long, conspicuous only in bud; petals 6–8 mm. long; calyx finally glabrous; filaments glabrous; connective distinctly elevated below and minutely bicalcarate at the prolonged base.—The Poeppig specimen not studied by me; the other Peruvian specimens, broader leaved in bud, are doubtful. Section *Tamonea*.

Loreto: Prov. Mainas, *Poeppig*. Yurimaguas, *Williams 4036; 4458; 4693*. Bolivia to the West Indies.

Miconia hamata Cogn. Bot. Jahrb. 42: 141. 1908.

Branches obscurely quadrate, the younger densely clothed with subappressed, mostly plumose trichomes; petioles 5–15 mm. long; leaves subcoriaceous, narrowly ovate, rounded at base, shortly acuminate, 7-plinerved, strigose above with spreading hook-setae, these definitely thickened at base, densely long-villous beneath, 6–8 cm. long, 2.5–4 cm. broad; flowers 5-merous, sessile, in very small heads; calyx densely villous, minutely and broadly lobed, 2 mm. long; petals white, 1.5 mm. long; filaments capillary, glabrous as the style, both about 3 mm. long.—Allied to *M. capitellata* Cogn., 892, of Ecuador, with broader 5-plinerved leaves and deep yellow petals 2 mm. long. Section *Amblyarrhena*. F.M. Neg. 17074.

Amazonas: Near Tambo Bagazán, 2,200 meters, *Weberbauer 4447*, type.

Miconia Herrerae Gleason, Amer. Jour. Bot. 19: 745. 1932.

Flowering branches stout, simple, slightly compressed, thinly stellate-tomentulose toward the tips; petioles stout, 15–20 mm. long; leaves subcoriaceous, elliptic, acute at both ends, entire, 3-nerved, with an additional pair of submarginal veins, to 18 cm. long and half as wide, soon glabrous above, loosely but permanently stellate-pubescent beneath, the veins reticulately raised; panicle ample, its branches sparsely stellate-tomentulose; flowers 5–8-usually 6-merous, sessile in small glomerules; calyx lightly stellate-puberulent, about 3 mm. long, the membranous sepals rotund, 0.3 mm. long; petals nearly 2.5 mm. long, glabrous, retuse; stamens about 20, the filaments straight or geniculate below the apex; connective produced into 4 minute lobes; style glabrous, 5 mm. long, the stigma capitate.—Cf. *M. Pavoniana*. Section *Glossocentrum*.

Cuzco: Cedrobamba, Urubamba Valley, 2,200 meters, *Herrera 1575*, type; *3194; 3221*.

Miconia heteromera Naud. Ann. Sci. Nat. sér. 3. 16: 124. 1851; 812.

Typically upper branches and younger parts granulose-scurfy and densely brown-hirsutulous with spreading trichomes, rarely glabrate; petioles 0.5–1 cm. long; leaves rather strongly unequal, 5–6 (–10) cm. long, 2–2.5 (–3) cm. broad, oblong-lanceolate, long-acuminate, sparsely setulose on both sides, 3-nerved; panicles racemiform, few-flowered, only 2–3 cm. long, the shortly pedicellate flowers usually 6-merous; calyx 2.5–3 mm. long; petals obtuse, 4 mm. long; style little enlarged apically, 6 mm. long.—The setose trichomes typically are more persistent than the stellate. But Gleason refers here *Williams 2688; 2985; 3011* from Loreto, glabrous except "thinly furfuraceous on petioles and stems." Section *Eumiconia*. F.M. Neg. 17076.

San Martín: Tocache, *Poeppig 1911*, type.—Loreto: La Victoria, *Williams 2985; 3011; 2688*.

Miconia hygrophila Naud. Ann. Sci. Nat. sér. 3. 16: 220. 1851; 905.

Branches obscurely tetragonous, the upper, as the petioles and panicles, scurfy tomentose; petioles 1–3 cm. long, stout; leaves oblong-elliptic, acute, the entire margin revolute, coriaceous, reddish and nearly glabrous to densely hirtellous with plumose trichomes beneath, especially on the 3 principal nerves; panicles ample, much branched, the ebracteate flowers sessile; calyx shortly 5-dentate; petals retuse, white, 1 mm. long; stigma minutely capitate.—Section *Cremanium*.

Ayacucho: Ccarrapa, *Killip & Smith 22457*.—Junín: Carpapata, *Killip & Smith 24471* (det. Gl.).—Cuzco: Río Chaupimayo, *Soukup 590*.

Miconia ibaguensis (Bonpl.) Triana, Trans. Linn. Soc. 28: 110. 1871; 815. *Melastoma ibaguensis* Bonpl. Melast. 105. *pl. 45*. 1816.

Upper branches often minutely stellate as well as densely hirsute-setulose with brown, somewhat spreading trichomes; petioles 0.5–1 cm. long; leaves oblong-ovate-lanceolate, often minutely serrulate and ciliate, setulose-hirsute beneath, sometimes also more or less above, shortly 5-plinerved (sometimes 5-nerved, 3 principal nerves), 6–12 cm. long, (2) 2.5–5 cm. broad; calyx minutely stellate-villous and somewhat setulose, 5-lobed, 3 mm. long; petals 2.5–3 mm. long, white, yellowish or rarely roseate; connective simple or minutely tuberculate, anteriorly biauriculate; style 5–7 mm. long, the stigma somewhat infundibuliform.—The pubescence even on the leaves is loose or spreading. Var. *glabrata* (Steud.) Cogn. is the form with

hirsute branches, the leaves usually entire, lustrous and glabrous or glabrate above. Section *Eumiconia*.

Junín: La Merced, *5488; 5534*. Chanchamayo Valley, *Schunke 347; 357; 1543*. San Ramón, *Killip & Smith 24781*.—Huánuco: Monzón, *Weberbauer 3474* (det. Cogn.). Pozuzo, *4568*. Pampayacu, *5020*. Cuchero and Casapi, *Poeppig 4; 98; 1403*.—San Martín: Moyobamba, (*Fielding*, the var.); *Mathews 1294; 1717; 3215; (Fielding 1294)*. Tarapoto, *Ule 6457* (det. Pilger); *Poeppig; Spruce 4233; Williams 5480; 5630; 6151; 6428; 6433*. San Roque, *Williams 7530*. Brazil to Mexico and the West Indies. "Mullaca."

Miconia icosandra Gleason, Bull. Torrey Club 58: 239. 1931.

Small, completely glabrous (essentially) tree with stout, obtusely 4-angled branches and membranous, narrowly oblong, acuminate, entire, shortly 5-plinerved leaves; petioles slender, 1.5–2.5 cm. long; leaves to 16 cm. long, a third as broad, acute at base, obscurely pulverulent beneath; panicles to 1.5 dm. long, the 5-merous flowers crowded in small cymules, the lateral subsessile; calyx glabrous, about 2.5 mm. long, the broadly triangular acute sepals 0.4 mm. long; petals 3 mm. long, obliquely retuse, minutely pulverulent on both sides; stamens about 20; filaments filiform; connective shortly produced into an oblong dorsal lobe and 2 broadly rounded lateral lobes; ovary 4-celled, glabrous, the placentae nearly basal, extending radially into the cells and adnate to the bottom of the ovary, with 10–13 ovules in each cell; style 6 mm. long, the stigma capitate.—There are usually some sterile filaments; the arrangement of the placentae is most unusual, although there are species in which the ovules are reduced to one in each cell at base (Gleason). Section *Glossocentrum*.

Junín: Eneñas, Pichis Trail, 1,600 meters, *Killip & Smith 25781*, type.

Miconia impetiolaris (Sw.) D. Don, Mem. Wern. Soc. 4: 316. 1823; 775. *Melastoma impetiolaris* Sw. Prodr. 70. 1788.

Allied to *M. amplexicaulis* but the leaves elliptic, somewhat plinerved, usually undulate-toothed, sometimes entire, subamplexicaul and auriculate at base; panicle branches long, spreading (when well-developed), interruptedly spike-like; calyx campanulate, shortly lobed, 2.5–3 mm. long, typically stellate, in Peru often glabrate; petals white, retuse, 2–3 mm. long; connective prolonged, recurved around filament, at the end obscurely 3-lobed or truncate (Gleason); style 4 mm. long.—*M. grandifolia* is nearly this but that, at least as

to type, is merely pulverulent even to the narrow inflorescence. A shrub or small tree. Section *Eumiconia.*

Huánuco: Near confluence of the Río Huallaga and the Río Cayumba, 794 meters, *Mexia 8268* (det. Gl.). Bolivia to Mexico and the West Indies.

Miconia inamoena Pilger, Verh. Bot. Ver. Brandenb. 47: 171. 1905.

Branches and petioles densely hirsute-setulose with reddish trichomes, these softer and more crisped on the leaves beneath, shorter and fewer on the leaves above; petioles stout, elongate; leaves to 2 dm. long, half as broad, 7-nerved, membranous, elliptic, sometimes slightly cordate at base, shortly narrowed and abruptly short acuminate at the tips; flowers crowded, sessile, few; calyx tube broadly campanulate, about 2 mm. long, the 5 subulate lobes acute; petals roseate, broadly elliptic, irregularly retuse; stamens 10, the thick, broad filaments slightly pilose, 2 mm. long, the longer style with capitate stigma.—Allied by author to *M. obscura* (Bonpl.) Naud. Section *Amblyarrhena.* F.M. Neg. 17080.

Loreto: Cerro de Escaler, 1,200 meters, *Ule 6735*, type.

Miconia integrifolia Cogn. Melast. 936. 1891.

Branches obscurely quadrate, somewhat scurfy (and with a few scattered setae) puberulent as the petioles and thyrsoid panicles; petioles 0.5–1 cm. long; leaves coriaceous, narrowly ovate, minutely cordate at base, acute, entire, obscurely 3 (2 obscure outer nerves) –5-plinerved, glabrous and lustrous above, faintly hirtellous in nerve axils beneath, 5–8 cm. long, 2.5–3.5 cm. broad; panicles as long, the flowers congested, 4-merous, on pedicels 1–3 mm. long; calyx subhemispheric, 2.5 mm. long; petals broadly subrotund, 1.5–2 mm. long; style sparsely hirtellous, 3 mm. long, the stigma capitate. —Cf. *M. laurina,* to which, as to Ruiz & Pavón specimen from Vitoc, this description applies except that the anthers are seemingly those of Section *Cremanium;* however, the pores are soon open. Section *Chaenopleura.*

San Martín: Valle de Vitoc, *Isern 2343.* Without locality, *Ruiz & Pavón* (Herb. Boissier).

Miconia juruensis Pilger, Verh. Bot. Ver. Brandenb. 47: 172. 1905.

Tree, essentially glabrous, the pubescence where present only a very sparse pulverulence; petioles 1–2 cm. long; leaves membranous

or firm, elliptic, more or less rounded at base, shortly acuminate, mostly 10–12 cm. long, 3–5 cm. broad, 3-plinerved, the outer additional nerves faint, typically opaque on both sides; flowers subsessile, the panicles about 1 dm. long; calyx tube 3.5–4 mm. long, campanulate-cylindrical, the dilated limb scarcely denticulate; petals white, 5, irregularly elliptic and emarginate apically, 3.5–4 mm. long; stamens 10, connective somewhat stipitate-glandular; style finally 7 mm. long, the stigma minutely capitate.—Section *Eumiconia*. F.M. Neg. 17084.

Loreto: Mouth of Santiago, *Tessmann 4218* (det. Markgr.). Lower Río Nanay, *Williams 481* (det. Gl.). Yurimaguas, *Williams 4230; 5186*. Brazil; Bolivia. "Caracha caspi."

Miconia Klugii Gleason, Bull. Torrey Club 58: 240. 1931.

Branches stout, roundly 4-angled, very closely and minutely lepidote as the stout, angled petioles, these 2–6 cm. long; leaves firm, elliptic, acute at base, abruptly acuminate, 3-plinerved, glabrous and lustrous above, densely covered beneath with a thick brown lepidote indument, sometimes 2 dm. long or longer by half as wide; veins strongly impressed above; inflorescence freely branched, to 2 dm. long, closely but thinly lepidote; flowers sessile, 5-merous; calyx campanulate, nearly 2 mm. long, its walls fleshy; sepals minute points; petals cuneate-obovate, 1.8 mm. long, 1 mm. wide, obliquely truncate or slightly retuse; connective lobed basally; ovary 3-celled, glabrous, the style 2.5 mm. long, gradually thickened to the truncate stigma.—Section *Glossocentrum*.

Loreto: Iquitos, 10-meter tree, *Klug 1141*, type.

Miconia lacera (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 152. 1851; 866. *Melastoma lacera* Bonpl. Melast. 9. *pl. 5*. 1816.

Slender, branched shrub well marked by the long, often bright red pilosity of the upper stems and the leaf-margins, the trichomes even to 5 mm. long; petioles 1–2 cm. long; leaves thin, 7–15 cm. long, half as wide, 3-nerved, sparsely setose on both sides or somewhat villous beneath, the trichomes, especially above, usually scattered, in general oblong-lanceolate, acuminate, minutely denticulate; panicles 5–10 cm. long, the long ciliate bractlets 1–3 mm. long; calyx tube 2 mm. long, the interior very long laciniate-setose lobes little shorter; petals rose, 3–4 mm. long; style 3 mm. long.—Section *Amblyarrhena*.

Loreto: Florida, 1 meter high, the flowers white, *Klug 2230* (det. Gl.). Brazil to Mexico and the West Indies. "Chosero-ey" (Huitoto).

Miconia lasiocalyx Cogn. Bull. Torrey Club 23: 278. 1896.

Obtusely tetragonous branches and petioles shortly and densely hirtellous-puberulent or hirtellous-scurfy; petioles 2–3.5 cm. long; leaves membranous, obscurely denticulate, ovate-oblong-elliptic, acuminate, rounded at base, very shortly and appressed-setulose above, minutely hirtellous beneath, shortly 5–7-plinerved, 1.5–2 dm. long, 6–8 cm. wide; flowers 5-merous, sessile, rather crowded, the pyramidal panicle with divaricate branches; calyx almost shaggy-hirsute, the tube 3 mm. long; petals broadly obovate, subtruncate, 1 mm. long; anthers 2-pored apically; style 3 mm. long, the stigma peltate.—Aff. *M. costaricensis* and the anthers 2-pored according to the author; nevertheless referred by him to Section *Amblyarrhena*, with "anthers minutely 1-pored."

Cuzco: Near Río Yanamayo, *Pennell 14053*. Bolivia.

Miconia lasiostyla Gleason, Bull. Torrey Club 58: 243. 1931.

Young branches obtusely tetragonous and lightly sulcate, densely clothed with branched brown trichomes; petioles stout, 1–2 cm. long; leaves membranous, obovate-oblong, entire, acute, narrowed from above the middle to an obtuse base, 5–7-plinerved, glabrous above except shortly stellate-pubescent on the primaries, densely brown-stellate-pubescent beneath, to 2 dm. long, 7.5 cm. wide; panicles ample, the trichomes densely stellate-tomentose on the glomerate, subsessile, globose-campanulate calyces, these nearly 5 mm. long, sessile and much-branched; sepals broadly rotund, glabrate, the outer teeth stout, conic; petals subrotund, 2.5 mm. long, somewhat retuse; filaments glandular, below flattened, above terete; anthers oblong, obtuse, the connective not produced, simple; ovary 4-celled, many-ovuled, apically glandular; style densely glandular, about 5 mm. long, the stigma peltate.—Differs in pubescence, closely glomerulate flowers and shape of leaves from *M. majalis* Cogn. and *M. floribunda* (Bonpl.) DC. (Gleason). Section *Amblyarrhena*.

Huánuco: Tree 8 meters high, Pan de Azucar, *Sawada 77*.

Miconia latifolia (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 921. *Cremanium latifolium* D. Don, Mem. Wern. Soc. 4: 312. 1823.

Upper branches obtusely quadrate, glabrate, obscurely pilose; leaves serrulate, cordate-ovate, acute, 7–9 (–10) cm. long, 3–5.5 cm. wide, smooth and lustrous above, pilose-setulose on the nerves and the veins beneath; inflorescence glabrous, the many flowers 4-merous,

white, small, on pedicels 1.5 mm. long.—Inadequately known; cf. *M. andina*. Section *Cremanium*. F.M. Negs. 17091; 29502.

Junín: Vitoc, *Ruiz & Pavón*, type.

Miconia laurina (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 245. 1851 (name); 899. *Cremanium laurinum* D. Don, Mem. Wern. Soc. 4: 313. 1823.

Branches pilose; leaves lanceolate, obtuse, glabrous above, pilose beneath, 3-nerved; panicle racemose; flowers 5- or 6-merous, pedicellate, nodding, small, white.—No specimen so named has been found in the Ruiz and Pavón collections, but a plant from Vitoc (*Ruiz & Pavón*) may belong here; however, it could as well be referred, as to foliage at least, to *M. integrifolia*. Section *Cremanium*.

Huánuco: Pampayacu, *Sawada P.16*(?). Without locality (*Pavón*).

Miconia Lechleri Triana, Trans. Linn. Soc. 28: 124. 1871; 891.

Branchlets and leaves beneath densely stellate-tomentose, the latter ovate-cordate, long-subcaudate-acuminate, shortly strigose above, 9-nerved, lightly foveolate beneath, 1–1.5 dm. long, 7–10 cm. wide; petioles setose-barbate above, 2–3 cm. long; panicle lax, 1–1.5 dm. long, glabrous as the sessile calyces, these acutely dentate, 2.5–3 mm. long; petals triangular-oblong, 2 mm. long; connective simple; style 4 mm. long; fruit 3–4 mm. thick.—Allied by Cogniaux to *M. Ruizii*, now fide Gleason in Section *Eumiconia*, a similar Clidemia-like shrub.

Puno: Tatanara, *Lechler 2562*, type.

Miconia lepidota [Schrank & Mart.] DC. Prodr. 3: 180. 1828; 788. *Melastoma lepidota* Schrank & Mart. ex DC. l.c., in syn.

A shrub with conspicuous foliage, the leaves dark green above, rusty-cinereous beneath with a dense, compact, stellate-lepidote indument, the brownish silvery scales persistently concealing the leaf surface; upper branches compressed, becoming glabrate; petioles 1–2.5 cm. long; leaves ovate-oblong, shortly acuminate, firm, 3-nerved with an additional fainter pair, 8–20 cm. long, half as wide; flowers borne secundly, the panicle much branched; calyx 10-costate, 2.5 mm. long; petals 2 mm. long, retuse; connective anteriorly bicalcarate; style 5 mm. long, the stigma somewhat peltate; fruit black, 2 mm. thick.—The scarcely significant var. *grandifolia* Cogn. has leaves 10–25 cm. long, 8–13 cm. wide, the petioles 2–4.5 cm. long. Section *Eumiconia*. F.M. Neg. 17094.

Loreto: Yurimaguas, *Poeppig 2458; Klug* (the var.); *Killip & Smith 29954* (det. Gl.). Bolivia to Guiana.

Miconia lilacina Triana, Trans. Linn. Soc. 28: 129. 1871; 914.

Glabrous, the slender branches obtusely 4-sided; leaves coriaceous, sessile, pale and opaque above, drying darker beneath, ovate-lanceolate, cordate and somewhat amplexicaul at base, long-acuminate, 5-nerved, 7–10 cm. long, 3–4 cm. broad; panicle pyramidal, 5–10 cm. long; pedicels 1–2 mm. long, articulate above the middle; calyx 2 mm. long, the coriaceous limb shortly and acutely lobed; petals lilac, obtuse, less than 1 mm. long; connective perfectly smooth; ovary glabrous; style 2–3 mm. long, the blackish stigma capitate; fruit blue, 6 mm. thick.—Section *Cremanium.*

Cuzco: *Pearce.* Without locality (*Haenke*).

Miconia livida Triana, Trans. Linn. Soc. 28: 121. 1871; 876.

Completely glabrous with terete, very slender branches and narrowly lanceolate, long-caudate, acuminate, 5-plinerved, membranous leaves, their margins lightly undulate and minutely setulose-denticulate, usually about 10 cm. long, 1.5–2.5 cm. broad; petioles 1 cm. long; panicle many-flowered, 6–10 cm. long; pedicels 2–3 mm. long; calyx ovoid, distinctly and acutely lobed, 2 mm. long; petals 5, broadly obovate, 1.5 mm. long; connective simple; style filiform, glabrous, scarcely enlarged apically, 4–5 mm. long.—Leaves with 3 nerves above the base and 2 faint marginal basal ones. Section *Amblyarrhena.* F.M. Neg. 29503.

Huánuco: Chinchao, *Ruiz & Pavón.* Without locality (*Mathews 1180*). Distrito Churubamba, 1,725 meters, *Mexia 8238.* Bolivia.

Miconia longifolia (Aubl.) DC. Prodr. 3: 184. 1828; 848. *Melastoma longifolia* Aubl. Pl. Guian. 1: 432. *pl. 170.* 1775.

Shrub or small tree with acutely 4-angled young branches, glabrous or glabrate throughout, the sparse or evanescent indument merely a stellate pulverulence; petioles slender, 5–15 mm. long; leaves usually in whorls of 3, shortly 3-plinerved, oblong-lanceolate, acuminate, acute at base, 8–18 cm. long, 2.5–6 cm. broad; panicles widely branched, the principal branches usually several at each node; flowers 5-merous, subsessile, fragrant; calyx broadly campanulate, about 2 mm. long, the sepals minute; petals about 1 mm. long, puberulent; connective prolonged into a broad, obtuse or truncate dorsal lobe; style terete, 3–4 mm. long, the stigma truncate or punctiform.—Section *Glossocentrum.*

Loreto: Pongo de Manseriche, *Tessmann 4100* (det. Markgr.). Iquitos, *Klug 2236* (det. Standl.). Río Itaya, *Williams 3402; 3280; 3506*. Florida, *Klug 2236; 2142*. Río Huallaga, *Williams 4912; 4769; 5350*. Fortaleza, near Yurimaguas, *Klug 2825*. Southern Brazil, the Andes and the West Indies. "Rifari," "echapa-ey" (Huitoto).

Miconia longiracemosa Gleason, Bull. Torrey Club 58: 232. 1931.

Simulates closely in vegetative characters *M. pteropoda* but the vein areoles on the lower side of the leaves are nearly always 5–6-sided and only 0.3 mm. across and, more especially, the anthers are dimorphic, the connective of the larger prolonged 0.4 mm. at base into a single semi-circular flat appendage, that of the smaller prolonged 0.2 mm. into a triangular dorsal and 2 broadly triangular deflexed lateral lobes.—As Gleason suggests, the value of the anther connective as a character in classification here is not fully known. Cf. also *M. prasina*. Section *Eumiconia*.

Loreto: Lower Río Huallaga, *Williams 4249*, type; same region or Río Itaya and Río Nanay, *Williams 115; 604; 3878; 4038; 4167; 4349* (all det. Gl.). Mishuyacu, near Iquitos, *Klug 339*(?). Brazil; Colombia. "Bucacuru caspi."

Miconia longisepala Gleason, Bull. Torrey Club 63: 536. 1936.

A small, glabrous tree, the upper branches obscurely 4-angled; petioles slender, 10–15 mm. long; leaves elliptic, abruptly and narrowly acuminate into a linear acumen 10–15 mm. long, clearly cuneate into the petiole, entire, 3-nerved, not counting the faint outer pair, firm, 6–8.5 cm. long, 2.5–3.5 cm. broad; pedicels slender, to 0.5 mm. long, but seemingly about 8 mm. long because nodose below the flowers; calyx subglobose, about 3.5 mm. long, the spreading or reflexed linear-oblong lobes acute, 3.2 mm. long, the outer linear terete teeth about 1 mm. long; petals reflexed, broadly oblong, inequilaterally retuse, 5.6 mm. long; filaments thick, flattened, densely glandular, the glands subsessile; connective simple; ovary 5-celled, glabrous; style stout, 8 mm. long, glandular, the glands below the middle minutely stipitate; stigma peltate, 2–3 mm. broad. —Sepals remarkably long, nearly equaling the tube. Section *Amblyarrhena*.

Loreto: 5-meter tree in forest, 600–1,200 meters, Pumayacu, *Klug 3233*, type.

Miconia loretensis Pilger, Verh. Bot. Ver. Brandenb. 47: 172. 1905.

Younger branches strongly flattened; leaves lanceolate or lanceolate-elliptic, gradually narrowed to the obtuse point and slightly decurrent into the 5–10 mm. long petiole, glabrous or faintly scurfy on the veins, drying black above, rather pale yellow-green beneath, 7–9 cm. long, about 2 cm. broad, shortly 3-plinerved with 2 partial marginal nerves; panicle dense, 7–8 cm. long, narrow, the branches subsimple; calyx subsessile, tomentulose, obconic-campanulate, denticulate apically, about 3 mm. long; petals obovate-elliptic, white, 3 mm. long; connective shortly subauriculately produced and denticulate; style 4 mm. long, the stigma minutely capitate; ovary 3-celled.—Allied to *M. prasina*. Section *Eumiconia*. F.M. Neg. 17100.

Loreto: Cerro de Escaler, 1,400 meters, *Ule 6734*, type.

Miconia lugubris Cogn. Bot. Jahrb. 42: 142. 1908.

Branches slender, subterete, with petioles and peduncles shortly and densely sordidly stellate-pilose; petioles 6–12 mm. long; leaves oblong-elliptic, acutish base and apex, entire, 3-nerved, 4–6 cm. long, 1.5–2.5 cm. broad, minutely setulose above, the trichomes enlarged at base, minutely and densely foveolate beneath and shortly and sparsely setulose, the nerves and veins rather densely stellate-puberulent; panicle broad, many-flowered, 4–7 cm. long, the flowers crowded on the simple branches; calyces sessile, urceolate, 1.5 mm. long, scarcely scurfy, the acute minute teeth shortly pilose; petals white, scarcely 1 mm. long; filaments capillary as the style, this glabrous, 2 mm. long, the stigma minutely capitate.—Allied to *M. atrofusca* and *M. caerulea*. *M. caelata* (Bonpl). DC., 906, as to type from Ecuador, is glabrous and bullate above, the calyx 2.5–3 mm. long; cf. *M. atrofusca*. Section *Cremanium*. F.M. Neg. 17101.

Huánuco: Southwest from Monzón, 2,500 meters, *Weberbauer 3394*, type.

Miconia Malatestae Macbr. Field Mus. Bot. 4: 181. 1929.

A stout, nearly glabrous, little-branched shrub 3 meters high, the upper branches obtusely tetragonous and sulcate; petioles thick, 1.5–2 cm. long; leaves fleshy-coriaceous, deep green and sublustrous above, drying yellowish, entire or obscurely and remotely ciliate-denticulate, oblong or ovate-elliptic, obtuse or shortly acute, somewhat decurrent at base into the petiole, mostly about 2 dm. long and half as broad, 3-nerved, with a pair of faint, additional, marginal nerves; panicle broadly pyramidal, 1–2 dm. long; calyces glabrous,

subsessile, shortly and acutely lobed, about 4 mm. long; petals white, broadly obovate, 3 mm. long; stamens 4.5 mm. long; anthers linear, apparently 1-pored, nearly 3 mm. long, shortly bituberculate at base; connective produced about 1 mm.; style 5 mm. long, the stigma peltate; fruit purple, 6 mm. thick.—Named for Señor Enrique Malatesta of Huánuco. Near *M. obovalis* Naud., 803, with obovate plinerved leaves with prominent transverse veins and smaller calyces. Section *Eumiconia*(?).

Huánuco: Hacienda Villcabamba on Río Chinchao, coarse stalked shrub, *5176*, type.

Miconia Martiniana Gleason, Bull. Torrey Club 58: 233. 1931.

Upper branches bisulcate, very densely brown-scurfy-tomentose; petioles stout, 3–5 cm. long, similarly pubescent; leaves narrowly obovate-oblong, acuminate, narrowed from the middle to the subcordate base, more or less obscurely undulate-serrate, 5-plinerved, soon glabrous and lustrous above except for the tomentose midnerve, softly stellate-pubescent, especially on the veins, beneath, to 3 dm. long, 14 cm. wide; flowers 5-merous, sessile, in dense glomerules on the few elongate, 4-sulcate, densely stellate-tomentose inflorescence branches; calyx campanulate, tomentose, about 3.5 mm. long, the acute lobes minute; petals cuneate, inequilaterally retuse, stellate without, nearly 3 mm. long; stamens dimorphic, the filaments 3.5 or 3 mm. long; connective of larger anthers expanded at base into 2 conspicuous lateral lobes and 2 minute dorsal ones or of the smaller into very slender lateral lobes and 1 minute dorsal one; ovary half inferior, 3-celled, apically pubescent and prolonged into 5 erect flat lobes; style glabrous, 7 mm. long, the stigma capitate. Cf. *M. glomerata;* also *M. Pentlandii* Naud., 771, Bolivian, the oblong leaves about 16 by 4 cm., the petals 1.5–2 mm. long. Section *Eumiconia.*

San Martín: San Roque, 1,350–1,500 meters, *Williams 7212*, type; *7529.*

Miconia Martiusiana DC. Prodr. 3: 186. 1828; 850.

Nearly glabrous; branches obtusely quadrate; petioles 1–1.5 cm. long; leaves nearly oval or broadly elliptic, 8–12 cm. long, 4–8 cm. wide, acute, rounded or barely acute at base, chartaceous-coriaceous, lustrous above, very shortly 5-plinerved, only the 3 middle nerves prominent; panicle about 1 dm. long; calyces subsessile, 2 mm. long, the limb caducous, distinctly 5-lobed; petals 1.5–2 mm. long; style

filiform, the stigma scarcely enlarged.—Section *Glossocentrum*. F.M. Neg. 17016.

Loreto: Mishuyacu, *Klug 22; 1082; 1090* (all det. Gl.). Brazil.

Miconia Matthaei Naud. Ann. Sci. Nat. sér. 3. 16: 176. 1851; 812.

Branches densely long-reddish-hirsute, the stiff trichomes incurved; petioles 1–2 cm. long; leaves lanceolate or oblong-lanceolate, often shortly caudate-acuminate, similar, 1–2 dm. long, 4–6 cm. broad, glabrous above, rather densely and crisply reddish-hirsutulous beneath, especially on the 3 nerves, these sometimes arising shortly above the leaf base; panicle softly red-villous, 5–8 cm. long, the bractlets 3–5 mm. long, the sessile 5-merous flowers crowded; calyx distinctly 5-lobed, the tube turbinate; petals 8 mm. long, style elongate, the stigma subpeltate; connective scarcely produced, anteriorly bilobed-glandular; fruit black, 3 mm. thick.—Section *Eumiconia*. F.M. Neg. 36274.

San Martín: Tocache, *Poeppig 1913*. Moyobamba, *Mathews 1299*, type; *Weberbauer 4706* (distr. as *M. stelligera*).—Loreto: Masisea, *Killip & Smith 26854* (det. Gl.). Amazonian Brazil; Bolivia; Trinidad; Central America.

Miconia mazanana Macbr., spec. nov.

Ramulis ad apicem, petiolis superioribus et pedunculis plus minusve dense setulosis praecipue ad nodos; petiolis solum 5–10 mm. longis; foliis ellipticis, basi subacutis, apice caudatis, breviter vel vix 5-plinerviis; calyce leviter furfuraceo; petalis fere glabris; filamentis sparse et minutissime hirsutulis ut videtur haud glandulosis; connectivo basi glanduloso.—Apparently much like *M. Donaeana* except for the setose pubescence, glabrate petals, eglandular filaments, in the last character similar to the otherwise different *M. amazonica* et al. A shrub 3 meters high, the stem 10 cm. in circumference; flower lilac (Schunke).

Loreto: Río Mazán, *José M. Schunke 374*, type.

Miconia media (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 915. *Cremanium medium* D. Don, Mem. Wern. Soc. 4: 313. 1823. *C. tinctorium* DC. Prodr. 3: 193. 1828. *M. tinctoria* Naud. l.c. 229.

Young branches and petioles somewhat ciliate-pilose, the latter 1–2 cm. long; leaves ovate-oblong, subrotund to acutish at base, obtusely acute, subentire or callous-serrulate, smooth, 3-nerved (with a fainter outer pair), 5–8 cm. long, 2–3 cm. wide; panicles 6–8

cm. long; pedicels 1–2 mm. long; calyx distinctly toothed, suburceolate, 2.5 mm. long; petals subrotund, 1.5 mm. long; style 3 mm. long, the stigma peltate.—Near *M. crocea* but the leaves are slender and longer and less definitely pubescent; the white flowers have an unpleasant odor. Section *Cremanium*. F.M. Neg. 17017.

Huánuco: Mito, *1462*. Pampayacu, *Sawada P25; P29; P93*. Southeast of Huánuco, *2099*. Huassa-huassi and Pillao, *Ruiz & Pavón*, type; *Dombey*.—Cuzco: Paucartambo, *Vargas 321* (det. Standl.). "Tire," "tire-morado," "tiri," "tiri-cimarón."

Miconia megaphylla Gleason, Bull. Torrey Club 59: 363. 1932.

Stems stout, obscurely 4-angled, very thinly tomentulose, appearing glabrous; petioles stout, 2–3 mm. long; leaves broadly elliptic, firm, glabrous above, compactly and minutely ashy-tomentulose beneath, 9–13-plinerved, broadly rounded at base, shortly acuminate, obscurely crenate; bracts oblong, 5–8 mm. long, deciduous; panicle appressed-stellate-pubescent, the 6-merous sessile flowers glomerate; calyx tubular, the coriaceous ovate sepals 3.3 mm. long, the outer teeth salient at nearly a right angle, 3-sided, keeled on the inner side; stamens equal; connective simple; ovary 4-celled with glabrous conic summit, 12-ribbed; style 10 mm. long, the stigma truncate.—The leaf-pubescence is so fine and closely appressed that the leaves appear merely ashy beneath, the veins glabrous; in the Peruvian material, the panicle is extremely narrow, in the type pyramidal. Section *Jucunda*.

San Martín: Near Moyobamba, 1,200 meters, 3 meters high, the flowers lilac-rose, *Klug 3518* (det. Gl.). Bolivia.

Miconia membranacea Triana, Trans. Linn. Soc. 28: 115. 1871; 830.

Related to *M. glaucescens* and similar but the leaves broader, 6–9 cm. wide, extremely thin, sessile and distinctly 3-plinerved, the calyx more or less furfuraceous-pubescent, the petals subacute and the stigma minutely capitate; anther connective a little enlarged posteriorly.—The brown lepidote-punctae do not conceal the under leaf surface. Section *Eumiconia*.

Huánuco: Valley of the Monzón, 700 meters, *Weberbauer 3682* (det. Cogn.); 285.—San Martín: Uchiza, *Ruiz & Pavón*, type. F.M. Neg. 17109.

Miconia Miles-Morgani Macbr. Field Mus. Bot. 4: 184. 1929.

Branches slender, nearly terete, early more or less scurfy-stellate as the petioles and peduncles, the former slender, 1–1.5 cm. long;

leaves broadly ovate, rounded or slightly cordate at base, scarcely or not at all acute, obscurely undulate-crenulate, membranous, minutely and sparsely stellate-pubescent above, becoming glabrous and somewhat reticulate bullate, rather sparsely stellate on the 5 nerves and reticulate veins beneath, mostly 5 cm. long, 3 cm. broad; panicles narrowly pyramidal, about 8 cm. long; pedicels 1 mm. long, the flowers sometimes nodding, 5-merous; calyx nearly glabrous, obscurely denticulate, 2 mm. long, as also the white petals; anthers subcuneiform, broadly 2-pored, 1.5 mm. long; style 2 mm. long, the stigma peltate.—The marginal nerves are faint; a bush to 1 meter high, with fragrant white flowers, apparently related to *M. peruviana*. Named for Miles Morgan, of the Cerro de Pasca Copper Corporation. Section *Cremanium*.

Huánuco: Between Muña and Tambo de Vaca, *4318*, type.

Miconia minutiflora (Bonpl.) DC. Prodr. 3: 189. 1828; 855. *Melastoma minutiflora* Bonpl. Melast. 50. *pl. 22*. 1816.

Divaricately branched even to the inflorescence, the slender branches slightly compressed, glabrous or nearly so or only with some scattered, minute, stellate trichomes; petioles 3–6 mm. long; leaves oblong-lanceolate, often shortly narrowed at base, acute to caudate-acuminate, 8–12 cm. long, 2–5 cm. broad, 3-nerved; panicles nearly as broad as long; flowers subsessile, the calyx limb deciduous, indistinctly 5-lobed, the petals white, 2–2.5 mm. long; style 4 mm. long, enlarged above, truncate.—The calyx is scarcely 1.5 mm. long. Here probably belongs *M. Candolleana* Triana, 854, and *M. pusilliflora* (DC.) Triana, 864, as to Peruvian material so named. Calyx lobes at most 0.5 mm. long, acute or subacute, with broad rounded sinuses; stamens barely dimorphic, the lateral lobes of the connective of the smaller not salient or none, those of the larger, small or none (Gleason, Bull. Torrey Club 55: 117. 1928). Section *Glossocentrum*.

Junín: Chanchamayo Valley, *Schunke 422; 268; 1506*. La Merced, *5476*(?) (compare *M. Regelii*).—Huánuco: Cuchero, *Poeppig 116; 1741*. Chinchao, *Ruiz & Pavón*.—San Martín: Tarapoto (*Fielding 1268*). Moyobamba, *Mathews 1268*.—Loreto: *Williams 1616* (det. Gl.). Pongo de Manseriche, *Tessmann 3643* (det. Markgr. as *M. Candolleana*). Florida, *Klug 2177* (det. Standl.). Iquitos, *Klug 736; Killip & Smith 27346*. Northern South America and Trinidad. "Yanabarigu-ey" (Huitoto), "carachupa sacha."

Miconia modica Macbr. Field Mus. Bot. 4: 182. 1929.

Upper branches obtusely tetragonous, sulcate, with the petioles, panicles, calyces and leaves beneath, especially on the nerves, shortly

and densely scurfy-stellate with brown trichomes; petioles 4–7 cm. long; leaves shortly 5-plinerved, rather firm, entire or obscurely and remotely callous-denticulate, ovate-elliptic, obtuse or subrounded at base, gradually obtusely acuminate, mostly 2 dm. long and half as broad, glabrous above; transverse veins prominent beneath; panicles ample; pedicels 1–2 mm. long; flowers 5-merous; calyx about 3 mm. long; petals white, 4 mm. long, puberulent; filaments and style glandular; anthers oblong, not at all ventricose, scarcely 2 mm. long; style to 5 mm. long, the stigma minutely capitate.—A specimen only in bud, *Sawada 57*, from Pampayacu, with leaves pilose beneath, probably is related. *Sawada 85*, from Chinchao, also only in bud, is glabrate; both approach *M. majalis* Cogn., 886, et al. Section *Amblyarrhena*.

Ayacucho: Choimacota Valley, in evergreen forest, 8 meters high, *Weberbauer 7552*, type.

Miconia mollis Triana, Trans. Linn. Soc. 28: 113. 1871; 822.

Branches and leaves beneath cinereous with a dense pilose, stellate tomentum; petioles 3–7 mm. long; leaves elliptic-oblong, 3-nerved with 2 additional partial submarginal nerves, minutely cordate at base, shortly acuminate, in age only scabrous above, 1–2 dm. long, 3–7 cm. broad, acutely and rather unevenly dentate; panicles 5–10 mm. long; bractlets 2–5 mm. long; flowers sessile or nearly so, moderately crowded at the ends of the panicle branches; calyx 5 mm. long, suburceolate; petals stellate-tomentose, 4 mm. long; connective smooth; style to 9 mm. long.—Well marked by the leaf dentation, the teeth 3–5 mm. long. Section *Eumiconia*. F.M. Neg. 21190.

San Martín: Lamas, *Mathews 1292*. Tarapoto, *Spruce 4177; Williams 6718* (det. Gl.).

Miconia monzoniensis Cogn. Bot. Jahrb. 42: 140. 1908. *Miconia pterogona* Gleason, Amer. Jour. Bot. 19: 746. 1932.

Nearly glabrous shrub with slender, acutely more or less wing-angled branches, firm or coriaceous, oblong or elliptic-obovate, sharply acute, entire, shortly 3-plinerved leaves and 5-merous flowers borne in dense panicles 5–7 cm. long; petioles stout, 2–5 mm. long; leaves rather lustrous above, obtuse at base, 5–8 (15) cm. long, half as broad, the somewhat arachnoid-scurfy nerves very prominent beneath, with numerous widely spreading transverse veins; calyx tube fleshy, 3 mm. long, the teeth 0.5–0.7 mm. long; petals white, obliquely and broadly ovate, glabrous, 2 mm. long; stamens glabrous, connective simple, the style 3–4 (4.5) mm. long, slightly

enlarged apically; ovary 3-celled (Gleason).—The sessile or subsessile flowers are compactly borne; allied to *M. elongata.* Erect tree 6 meters high, the fruit pink (Mexia). The Mexia specimen in Field Museum Herbarium seems to be *M. livida.* The type of Gleason's species has more stoutly winged branches, somewhat larger leaves, and is obscurely appressed-arachnoid or glutinous-scurfy, characters in degree found in type of Cogn. from same region. Section *Amblyarrhena.* F.M. Neg. 17117.

Huánuco: Southwest of Monzón, 2,400 meters, *Weberbauer 3420,* type. Distrito Churubambo, in forest, 1,750 meters, *Mexia 8238* (det. Gl.). Pan de Azucar, *Sawada 79,* type, *M. pterogona.*

Miconia mucronata (Desr.) Naud. Ann. Sci. Nat. sér. 3. 16: 120. 1851; 732. *Melastoma mucronata* Desr. in Lam. Encycl. 4: 46. 1797. *Melastoma holosericea* L. Sp. Pl. 390. 1753. *M. holosericea* (L.) Triana, Trans. Linn. Soc. 28: 101. 1871 (not DC.).

Branches glabrate or with the leaves beneath more or less velvety stellate, the indument often so compact that the leaf-surface appears painted; petioles 1–3 cm. long; leaves coriaceous, ovate-elliptic, abruptly acuminate or long-caudate, acute or cuneate at base, glabrous above, 3–5-nerved or 3–5-subplinerved, 1–4 dm. long, 6–12 cm. broad; flowers 6–9 mm. long, sessile, usually 6-merous, umbellately disposed in many-flowered panicles; bracts 3–4 mm. long, caducous; calyx tube 6 mm. long, the rounded sepals 2.5–3.5 mm. long, calloused by the outer tooth, deciduous; petals 9 mm. long, slightly retuse; filaments 6–8 mm. long, equaled by the anthers, these subulate, the extended connective with 2 obtuse basal lobes and a short erect dorsal spur; ovary usually 4-celled; style to 18 mm. long and stigma truncate.—Section *Jucunda.*

The pubescence of this and other species with similar indument has been used for tinder.

San Martín: Lamas, *Williams 6435* (det. Gl.). Near Moyobamba, 1,100 meters, *Klug 3342.*—Junín: San Ramón (*Killip & Smith 24766; 24800,* det. Gl.). Bolivia and Brazil to Trinidad.

Miconia muricata (D. Don) Triana, Trans. Linn. Soc. 28: 102. 1871; 756. *Axinaea muricata* D. Don, Mem. Wern. Soc. 4: 321. 1823.

Flowering branches very shortly scurfy or muricate, subquadrate; petioles 2–4 cm. long; leaves elliptic-obovate, subcordate at base, caudate-acuminate, densely crenulate-denticulate, glabrous above, sparsely scurfy beneath, firm, 5-nerved, 1.5–3 dm. long, 10–17 cm. wide; panicles to 2 dm. long; pedicels 1–7 mm. long; flowers 5-merous;

calyx densely muricate, 6 mm. long, the rounded lobes with a minute dorsal tooth. The conical tubercled calyx is usually muricate-scurfy or early merely puberulent, but often the conical tubercles on the fruiting calyx are conspicuous, sometimes even to 0.5 mm. long.—In spite of the many collections made, *M. muricata* has never been found in flower, simply, perhaps, because in flower it has been called *M. glandulifera*. Section *Octomeris*. F.M. Negs. 34153; 17120.

Huánuco: Pozuzo, *4573*(?) (in fruit).—Junín: Vitoc, *Ruiz & Pavón*, type. La Merced, *Killip & Smith 23526; 24085* (det. Gl.).

Miconia myriantha Benth. in Hook. Journ. Bot. 2: 314. 1840; 855.

Similar to *M. minutiflora;* sepals triangular-ovate, scarcely 1 mm. long, acute, reflexed at anthesis, with a minute outer tooth, the intervening sinuses narrow and acute; stamens distinctly dimorphic, the larger with connective prolonged into a dorsal appendage, with 2 narrow lateral lobes directed forward, the smaller with narrow spur and 2 short lobes; the calyx is often stellate-puberulent.—Lowlands.

Peru (probably). Trinidad to Bolivia.

Miconia neriifolia Triana, Trans. Linn. Soc. 28: 127. 1871; 907. *M. nervifolia* Triana, l.c. 181 (index).

Stoutly branched, the branches obtusely 4-sided, the petioles thick, 3–5 mm. long, the leaves fleshy coriaceous, narrowly lanceolate, entire, obtuse, 7–10 cm. long, 13–18 mm. broad, smooth, pale and opaque above, densely appressed stellate-tomentose with rusty trichomes, as also the compactly branched panicle; petioles 3–5 mm. long; calyx 2.5 mm. long, the limb 5-lobed; petals suborbicular, 2 mm. long; connective dorsally bituberculate at base; ovary glabrous, the style short, the stigma truncate.—The strict panicle branches are appressed-ascending with thick pedicels; the transverse leaf-veins are manifestly numerous beneath. The var. *brevifolia* Cogn. Bot. Jahrb. 42: 143. 1908 has leaves 3.5–5 cm. long, 12–19 mm. broad, the flowers a little larger. Section *Cremanium*. F.M. Neg. 17122 (var.).

Amazonas: Chachapoyas (*Mathews 24*, type).—Huánuco: Southwest of Monzón, 3,200 meters, *Weberbauer 3356*, the var. Chinchao, *Sawada 58*. Wet, rocky montaña, Playapampa, *4866*.

Miconia nervosa (Smith) Triana, Trans. Linn. Soc. 28: 111. 1871; 818. *Melastoma nervosa* Smith in Rees, Cycl. 23: n. 31. 1822.

A shrub usually about 2 meters high with strikingly 5–7-plinerved leaves typically ovate, acuminate and well-attenuate into a short petiole (this 1–2 cm. long) or subsessile, somewhat scabrous-setulose

above, subappressed-pilose beneath, 1.5–3 dm. long, 5–11 cm. broad, usually membranous; branches and panicles setulose or somewhat villous (the trichomes often light brown), the panicle extremely narrow, the flowers congested on the branches that are rarely longer than 1 cm.; calyces sessile to 4 mm. long; petals red, about 4 mm. long; connective simple; ovary nearly free; style 5 mm. long.—The var. *mediana* Macbr. Field Mus. Bot. 4: 181. 1929, has the leaves tapering to petioles 2–4 cm. long, the pubescence shortly hirsutulous beneath, the petals white. Very common in Loreto. *M. ceramicarpa* (DC.) Cogn., 819, of the Amazon and the Guianas, mentioned by Williams under the name "yutobanco," is probably, as to Peru, *M. nervosa*. In any case there may be only one species; the leaves of *M. ceramicarpa* are more shortly plinerved, more broadly cuneate to rounded at base, less pubescent. Section *Eumiconia*.

Huánuco: Tingo Maria, *Stork & Horton 9554*.—Junín: Hacienda Schunke, La Merced, *5811*, type, the var.; *5507*, the var.—San Martín: *Williams 6074* (det. Gl.). Chicoplaya, *Ruiz & Pavón*. Without locality, *Mathews 1288*.—Loreto: On the Río Ucayali, *Castelnau*. Yarina-Cocha, *Tessmann 3203* (det. Markgr.). Prov. Minas, *Poeppig 2557*, part. Río Itaya, *Williams 3261; Killip & Smith 29665*. Iquitos, *Williams 3728; 3729*. Pebas, *Williams 1869; 1601a; 1682; 1598*. Caballo-Cocha, *Williams 2043; 2321*. Río Nanay, *Williams 784; 685*. La Victoria, *Williams 3083; 2581*. Masisea, *Killip & Smith 26855*. Yurimaguas, *Killip & Smith 27967; Williams 4700; 3879; 4344; 4801*.—Río Acre: *Krukoff 5358*. Bolivia and Brazil to Trinidad and Mexico. "Sardina mullaca," "millua mullaca," "atun mullaca."

Miconia nigricans Cogn. Bot. Jahrb. 42: 146. 1908.

Branches obscurely angled, the younger, as the petioles and broadly pyramidal panicles including the calyces, densely stellate-scurfy; petioles slender, 4–7 mm. long; leaves coriaceous, soon glabrous above, early moderately stellate-scurfy beneath, becoming glabrate, narrowly oblong-lanceolate, rounded at base, acute or shortly acuminate, entire, 3-nerved, 6–9 cm. long, 1.5–2.5 cm. broad; panicles dense, 3–5 cm. long, the 5-merous flowers sessile; calyx broadly campanulate, 3 mm. long, minutely and subacutely toothed; petals white, 2 mm. long; stamens and style glabrous, the latter to 2.5 mm. long, the stigma peltate.—Allied to *M. rufa* Triana, of Cuba. Section *Chaenopleura*. F.M. Neg. 17124.

Amazonas: Tambo Ventillas, east of Chachapoyas, 2,400 meters, *Weberbauer 4392*, type.

Miconia nitida (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 934. *Cremanium nitidum* D. Don, Mem. Wern. Soc. 4: 312. 1823. *M. macrostoma* Naud. l.c. 235.

Glabrous or the young branches near the tip with a line of evanescent scurfy pubescence between the nodes; leaves very minutely and remotely spinulose denticulate, rigid, slightly lustrous on both sides, ovate, mostly obtuse or acutish, subcordate at base, 3-nerved, 3–5 cm. long, about 3 cm. broad; petioles 2–4 (–12) mm. long; panicles nodding, few-flowered; pedicels 1–5 mm. long; calyx 6 mm. long, the lobes broadly rotund; petals 4, white, thick, exserted about 5 mm.; filaments glandular pilose.—Stems said to root below, the branches slender. The Ruiz & Pavón specimen was at one time referred by Triana to *M. thyrsiflora*, that is, *M. thyrsoidea* according to Cogniaux. The leaves are finely impressed reticulate above. Section *Chaenopleura*. F.M. Negs. 17179; 29507; 25991.

Peru: Sariapata, *Ruiz & Pavón*, type.

Miconia nobilis Gleason, Bull. Torrey Club 58: 235. 1931.

Upper branches stout, roundly 4-angled and densely brown-tomentose; petioles 1 cm. long, 3-angled; leaves thin, obovate, acute at base, abruptly acuminate, entire, to 4.5 dm. long and half as wide, 5-plinerved (the outer pair submarginal), glabrous above, sparsely and thinly lanate beneath, the trichomes short, appressed; panicle ample, much branched, its strongly sulcate branches densely brown lanate; flowers 5-merous, sessile in small lateral glomerules; calyx campanulate, about 3.5 mm. long, soon glabrous, the sepals depressed, only 0.2 mm. long; petals nearly 3 mm. long; stamens somewhat dimorphic, linear, the connective produced and marginally glandular; ovary 3-celled; style stout, glabrous, nearly 3 mm. long, the stigma capitate.—Allied to *M. dipsacea* and related species. Collectors noted calyx as rich pink, corolla white. Section *Eumiconia*.

Junín: San Nicolas, Pichis Trail, tree 4–5 meters high, in dense forest, 1,100 meters, *Killip & Smith 26006*, type.

Miconia obscura (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 243. 1851; 889. *Melastoma obscura* Bonpl. Melast. 121. *pl. 52*. 1816. *Clidemia obscura* DC. Prodr. 3: 162. 1828.

Upper branches and inflorescences shortly red-brown hirtellous; petioles 1–2.5 cm. long; leaves elliptic, acute, entire, subcoriaceous, green, but the 3 nerves and the 2 fainter marginal ones beneath densely reddish-brown-villous, the veins and surface lightly so,

more or less tuberculate or bullate or sparsely asperous above, 1–1.5 dm. long, 4–6 cm. broad; panicle pyramidal, to 1.5 dm. long, the sessile flowers crowded; calyx 3 mm. long; petals ovate, 2 mm. long; style 4 mm. long, the stigma lightly dilated.—An attractive compact shrub. The Ecuadorian type is plinerved, bullate-asperous above. The Ruiz & Pavón specimen is merely sparsely asperous above, the calyx densely scurfy and setulose. Section *Amblyarrhena*. F.M. Neg. 37460.

Huánuco: Chinchao, *Ruiz & Pavón*(?). Cuchero, *Poeppig 120; (1502; 1726)*(?). Ecuador.

Miconia opacifolia Macbr. Field Mus. Bot. 4: 184. 1929.

A small tree about 3 meters high, completely glabrous except for a minute scabrosity on the upper side of the leaves, these sessile, membranous, drying yellowish above, rather purplish beneath, obscurely and remotely undulate denticulate, ovate-oblong or -lanceolate, basally cordate, gradually acuminate, 1.5–2 dm. long, mostly 7 or 8 cm. broad, 5–7-nerved; panicles pyramidal, about 1 dm. long; flowers 5-merous, minute, subsessile; calyx shortly lobed, scarcely 1 mm. long; petals apparently white; anthers obovoid, 2-pored, truncate; style included.—Flowering branches somewhat sulcate. Apparently allied to *M. lilacina* Triana. The leaves, living, were velvety in appearance. Section *Cremanium*.

Huánuco: Hacienda Villcabamba, Río Chinchao, *5197*, type.

Miconia Ottikeri Macbr. Field Mus. Bot. 4: 185. 1929.

A shrub about 1 meter high with glabrous, acutely 4-sided and somewhat winged branches; petioles 1.5–2 cm. long, setose above with long black trichomes; leaves coriaceous, minutely callous-ciliate-denticulate, ovate-acuminate, subrotund at base, glabrous above, yellowish beneath and glabrous except for the black pilose nerves, especially the middle one, mostly 7 cm. long, 3–3.5 cm. broad, definitely 3-nerved; marginal nerves nearly obsolete; panicles narrow, lax, about 1 dm. long; pedicels 2 mm. long; calyx glabrous, subhemispheric, shortly 5-lobed, 3–4 mm. long; fruit red, 5–6 mm. thick.—Apparently to be compared with *M. media* but the flowers unknown; it also suggests *M. flavescens* Cogn., 930. Named for Mr. Ottiker of the Ferrocarril Central del Peru. Section *Chaenopleura*.

Huánuco: Tambo de Vaca, *4430*, type.

Miconia pachydonta Gleason, Phytologia 1: 41. 1933.

Allied and in general character rather similar to *M. megaphylla;* petioles 5–10 mm. long; leaves obovate-oblong, narrowed or sub-

cuneate at base, 12–20 cm. long, 5–8 cm. wide; outer teeth of the deciduous sepals large, pyramidal, spreading at nearly right angles, the calyx densely and closely ashy-tomentose; style glandular-puberulent at base.—According to the author, near *M. gratissima* Benth., known from the Amazon Valley, but the leaves much broader, the calyx more densely tomentose and the ovary not spinulose tipped. Section *Jucunda*.

Loreto: In dense forest at Florida, *Klug 2143*, type; *2223*. "Jucaguino-ey," "chaita-nargu-ey" (Huitoto).

Miconia pandurata Triana, Trans. Linn. Soc. 28: 108. 1871; 807.

Small, little-branched shrub 12 dm. high, the strong, glabrous branches obtusely tetragonous; leaves membranous, brown above, purplish beneath, glabrous or scarcely scurfy, 5-plinerved (lateral nerves arising about the middle), sessile, rounded-cordate from the base, pandurate, acuminate, entire, 3–4 dm. long, 12–16 cm. broad; panicles broadly pyramidal, 2 dm. long, the branches divaricate; calyx densely scurfy-pubescent, 2.5 mm. long, the somewhat dilated limb obscurely 5-dentate.—Section *Eumiconia*.

San Martín: Campana Mountains, 1,500 meters, (*Spruce*, type). Colombia.

Miconia papillosa (Desr.) Naud. Ann. Sci. Nat. sér. 3. 16: 216. 1851; 892. *Melastoma papillosa* Desr. in Lam. Encycl. 4: 48. 1797.

Terete younger branches and calyces densely scurfy-tomentose as also the petioles and panicle-branches, but these usually with a few stiff simple trichomes intermixed; petioles 2–4 cm. long; leaves mostly ovate-oblong, obtusish, subcordate at base, crenulate, submembranous, 7-nerved, 6–10 cm. long, 3.5–5.5 cm. broad, conspicuously and coarsely bullate above and with a few short setae or glabrous, correspondingly deeply foveolate beneath, densely to rather sparsely crinkly hirtellous on the reticulate veins, the nerves scurfy with minute barbellate trichomes; flowers mostly sessile, crowded in panicles 5–10 cm. long; calyx 3 mm. long; petals subrotund, 1.5 mm. long; style 4–5 mm. long, the stigma subcapitate.—Suggests a little *M. trichrona* but the leaves narrower and smaller, branches scurfy and flowers crowded but not glomerate. Section *Amblyarrhena*. F.M. Neg. 25998.

Peru (probably). Bolivia; Ecuador.

Miconia pauciglandulosa Naud. Ann. Sci. Nat. sér. 3. 16: 183. 1851; 801.

Glabrous or scarcely puberulent at the tips of the slightly flattened branches and on the leaf nerves beneath; petioles 1–2 cm. long; leaves broadly ovate, rounded at base, acuminate, 1–1.5 dm. long, 5–9 cm. broad, membranous, shortly 5-plinerved; panicles scarcely 1 dm. long, the 5-merous flowers solitary at the tips of the panicle-branches or lateral; calyx tube 2 mm. long, the triangular lobes 0.7 mm. long; petals retuse, 2.5–3 mm. long; connective minutely produced at base and with a few pedicellate glands; style 5–6 mm. long.—The dried panicles, and to some extent the leaves, have a metallic tinge. Section *Eumiconia*. F.M. Neg. 26000.

Huánuco: Cuchero and Pampayacu, *Poeppig 2; 108; 1780*, type colls.

Miconia Pavoniana Naud. Ann. Sci. Nat. sér. 3. 16: 180. 1851; 903.

Branches stout, obtusely angled, reddish; petioles 1–1.5 cm. long; leaves oblong-elliptic, acutish at base, acuminate, subcoriaceous, rusty-red tomentose-stellate beneath, dark green above, entire or crenulate toward the tip, 5-nerved (or shortly plinerved), 1–2 dm. long, 6–7 cm. wide; panicle 1–2 dm. long, the usually 5-merous sessile flowers glomerate; calyx truncate, 3 mm. long; petals 2 mm. long; style 4 mm. long, the stigma subclavate.—*Sawada 65* has smaller plinerved leaves. Cf. *M. Herrerae*. Section *Cremanium*. F.M. Neg. 36272.

Huánuco: Tambillo, southwest of Panao, *3568*. Pampayacu, *Kanehira 76*. Pillao, in 1787, *Ruiz & Pavón*, type. Quebrada Panahuanca, (*Mathews 872*). Pan de Azucar, *Sawada 65*(?).

Miconia pedicellata Cogn. Melast. 875. 1891.

Glabrous; petioles 3–7 mm. long; leaves rigid but fragile in the herbarium, pale green above, brown beneath, narrowly lanceolate, acutish at base, long-acuminate, 8–12 cm. long, merely 2–2.5 cm. broad, 5-plinerved or rather 3-plinerved, the outer nerves very faint and not obvious above; panicle subcorymbose, 2–3 cm. long; pedicels 2–5 mm. long; calyx tube 2 mm. long, the lobes less than 1 mm. long; petals 5, ovate, 3 mm. long; style somewhat enlarged apically, 4–5 mm. long.—Section *Amblyarrhena*. F.M. Neg. 32339.

San Martín: Tarapoto, Campana Mountain, *Spruce 4342*. Costa Rica; Colombia.

Miconia peruviana Cogn. Melast. 909. 1891.

Branches obscurely 4-sided, the younger densely scurfy-hirtellous; petioles 5–10 mm. long; leaves narrowly ovate, basally obtuse, acute, 5-nerved, denticulate-ciliate, stellate-scurfy beneath, especially on the nerves, shortly and densely setulose-hirtellous above, 4–7 cm. long, 2–4 cm. wide, the numerous veins prominent beneath; panicles densely flowered, 5–6 cm. long, the pedicels scarcely 1 mm. long; calyx glabrous, obscurely 5-denticulate; style subclavate.—Drying yellowish brown and suggesting *Clidemia* in general aspect. Section *Cremanium*. F.M. Neg. 17129.

Puno: Tabina, *Lechler 2066*, type.

Miconia phaeophylla Triana, Trans. Linn. Soc. 28: 113. 1871; 825.

Tree 6 meters high, the upper flattened branches and the leaves beneath densely and minutely rusty-stellate, the tiny trichomes sublepidote; petioles 2–2.5 cm. long; leaves ovate or oblong-elliptic, decurrent to the petiole, obtusely caudate-acuminate, at first somewhat scurfy, in age glabrous and lustrous above, fleshy coriaceous, 5-nerved or shortly 5-plinerved, 1–1.5 dm. long, 4–6 cm. broad; panicle broadly pyramidal or subcorymbose; flowers subsessile, subumbellate at the tips of the panicle-branches; calyx turbinate-campanulate, 2.5–3 mm. long; petals white, 2.5 mm. long; anther-connective cordately auricled; style 4 mm. long.—Section *Eumiconia*. F.M. Neg. 26005.

San Martín: Tarapoto, *Spruce 4861*, type.

Miconia pileata [Schrank & Mart.] DC. Prodr. 3: 180. 1828; 867. *Melastoma pileatum* Schrank & Mart. ex DC. l.c. in syn.

Marked, as the closely related *M. lacera*, by the conspicuous ciliation on the leaf margins, but the trichomes shorter and stiffer, often sparser, as also on the branches; leaves firm, 3-nerved but with an additional fainter marginal pair; calyx 2–2.5 mm. long, the inner lobes much shorter than the tube, entire; petals 2 mm. long; style 2 mm. long; connective simple.—Section *Amblyarrhena*. F.M. Neg. 26007.

San Martín: Vicinity of Tarapoto, *Williams 6369; 6390; 7306; 7412* (all det. Gl.). Brazil; Colombia. "Casha mullaca," "millua mullaca."

Miconia Pilgeriana Ule, Notizbl. Bot. Gart. Berlin 6: 363. 1915.

Younger branches, petioles and panicles most minutely scurfy-stellate; petioles 8–13 mm. long; leaves oblong-elliptic or ovate-ob-

long, long and mucronulately acuminate, acute but shortly so at the rounded base (typically; sometimes even decurrent), the margins slightly undulate, 3-nerved with an outer fainter pair, firm, glabrous above unless for the nerves, more or less minutely stellate, scurfy-puberulent beneath, about 5 cm. wide, 12 cm. long; panicles nearly as broad as long, the slender branches spreading-ascending; flowers subsessile, 5-merous; calyx tube campanulate, truncate, indistinctly denticulate, 2 mm. long; petals elliptic, 2 mm. long; style thick, 1.5 mm. long, glabrous as the linear stamens, but these appearing short and broad.—Stamens distinctive, being sterile and nearly terete below while the distal portion broadens out into obovate fertile pollen sacs opening by a wide terminal pore similar to those of *M. stellipilis* Cogn. of Bolivia, with differently shaped petals (Gleason). Section *Glossocentrum*. F.M. Neg. 17134.

Loreto: Iquitos, *Tessmann 5062; 3618* (det. Markgr.); *3034; Klug 1350*. Pebas, *Williams 1714; 1779; 1718*. Caballo-Cocha, *Williams 2155; 2319* (distr. as *M. calvescens*). Río Itaya, *Williams 160; 3339*. Florida, *Klug 2258*. Brazil. "Rifai," "huirima-ey" (Huitoto), "palo blanco," "mullaca."

Miconia Poeppigii Triana, Trans. Linn. Soc. 28: 107. 1871; 808. *Miconia congesta* Cogn. Repert. Sp. Nov. 8: 2. 1910, fide Gleason.

A white-barked tree sometimes 25 meters high, very strict in habit, with green flowers and acutely angled upper branches that are evanescently scurfy-puberulent as the petioles above, these 1–2 cm. long; leaves elliptic, acute at base to rather long-attenuate, acuminate, firm or rigid, glabrous or scarcely pulverulent on the nerves beneath, shortly 5-plinerved (3 prominent ones, the outer 2 faint), 1–2 dm. long, 2.5–5 cm. broad; panicles many-flowered; petals oblong-obovate, 2 mm. long; anthers unequal, the connective of the larger curved at base and with 2 minute lateral teeth or spurs; calyx scurfy-puberulent, distinctly 4–5-lobed, 1.5 mm. long, obviously pediceled; style soon 3 mm. long, the stigma peltate; fruit black, 3 mm. thick.—Description of flowers from *Williams 3698*. Section *Eumiconia*. F.M. Neg. 17135.

San Martín: Tocache, *Poeppig 1912*, type.—Loreto: Yurimaguas, *Tessmann 3766* (det. Markgr.); *Williams 4147; 4373*, etc. (det. Gl.). Iquitos, *Williams 3698* (det. Gl.). La Victoria, *Williams 2900*. Río Itaya, *Williams 3340*. Bolivia; Brazil. "Rifari," "rupina."

Miconia polyneura Triana, Trans. Linn. Soc. 28: 128. 1871; 909.

Closely allied to *M. peruviana* but nearly glabrous except the scurfy-puberulent leaves and calyx; branches annulately enlarged

at the nodes; petioles 1–2.5 cm. long; leaves shortly and obtusely acuminate, callous-denticulate, subcoriaceous, pale and scurfy, especially on midrib beneath, 7–9 cm. long, 3–5 cm. broad; panicles broadly pyramidal, 1 dm. long; pedicels 1–3 mm. long; calyx 2 mm. long; petals subrotund, 1.5 mm. long; connective obscurely bitubercled; style 3–4 mm. long, the stigma minutely capitate.—Gleason in herb. has questioned the determination of the Weberbauer collection, which seems to merge with *M. galactantha*. *M. loxensis* (Bonpl.) DC., 911, to be expected in adjacent Peru, has setose denticulate leaves, subclavate stigma. Section *Cremanium*. F.M. Neg. 26013.

Ayacucho: Prov. Huanta, 3,100 meters, *Weberbauer 5585* (det. Cogn.). Without locality, *Bonpland*. Colombia.

Miconia prasina (Sw.) DC. Prodr. 3: 188. 1828; 805. *Melastoma prasina* Sw. Prodr. 69. 1788.

Essentially glabrous or the branches obscurely puberulent; petioles 5–20 mm. long, the oblong-lanceolate leaves often decurrent on them, drying yellowish green, acute, glabrous or at first a little puberulent beneath, 3–5-plinerved or scarcely so, 1–2 dm. long, 3–8 cm. wide; panicle usually ample, the branches opposite, the sessile or subsessile 5-merous flowers crowded toward their tips; calyx narrowly campanulate, about 3 mm. long, thinly scurfy-puberulent, acutely or obtusely toothed, the outer and inner teeth subequal; petals 2–3 mm. long; connective bilobed laterally; ovary 3-celled; style to 6 mm. long, slightly dilated to the truncate stigma.—Resembles in fruit *M. glaberrima*. Sometimes a tree 7 meters high. Gives a black dye. Section *Eumiconia*.

Puno: Valley of the Sandía, *Weberbauer 1113* (det. Cogn.); 278. —Loreto: Río Nanay, *Williams 572; 974*. Yurimaguas, *Williams 4807; Killip & Smith 28929*. Paraguay to Mexico and the West Indies. "Mullaca colorado," "mullu caspi," "isula micuna," "tintureira."

Miconia pseudo-centrophora Cogn. Melast. 893. 1891.

Branches subterete, scurfy-puberulent toward the tips as also the petioles and inflorescence, the former 1–2 cm. long, the latter pyramidal, 1 dm. long; leaves drying rigid and dark-colored above, where glabrous but minutely bullate, slightly foveolate and ashy-stellate-punctate beneath, rather closely mucronulate-dentate, 5-nerved, 6–10 cm. long, 2.5–4 cm. wide; pedicels 1–2 mm. long; calyx 2.5 mm. long; petals subrotund, 1.5 mm. long; style 4 mm.

long, the stigma subcapitate.—In the Peruvian specimen the leaves are sparsely scurfy only on the veins beneath or glabrate, the panicle 5–10 cm. long, the short appressed branches with glomerate flowers. Doubtfully distinct from *M. centrophora*, at least not separable on the character of plane or bullate leaves. Section *Amblyarrhena*. F.M. Neg. 17138.

Ancash: Huaraz, 3,000 meters, *Weberbauer 3259* (det. Cogn.). Ecuador.

Miconia pterocaulon Triana, Trans. Linn. Soc. 28: 114. 1871; 794.

Branches stout, broadly 4-winged; petioles strongly flattened, 1–2.5 cm. long; leaves entire or the margins scarcely undulate, broadly oblong-lanceolate, long-attenuate to the subacute base, shortly acuminate, submembranous, glabrous above, silvery beneath with an extremely fine appressed tomentum, 2–3 dm. long, 7–11 cm. wide; panicle narrow, the branches simple or bifid, 1–1.5 dm. long; calyx 2 mm. long, shortly 5-lobed; fruit globose, 3–4 mm. thick.—The stellate gray-brown indument on the leaves beneath is so dense and so fine that it appears to be a mere discoloration. Section *Eumiconia*. F.M. Neg. 26014.

Peru(?): Without locality, *Ruiz & Pavón* (det. Markgr.). Colombia.

Miconia pteropoda Benth. in Hook. Journ. Bot. 2: 314. 1840; 803.

Closely allied to *M. prasina* but the petioles apically wing-margined by the decurrence of the leaves, these larger, even to 2.5 dm. long, 7–9 cm. broad; panicle branches divaricate; calyces distinctly but extremely minutely puberulent, the outer teeth obsolete or tubercle-like, the inner depressed; petals obscurely puberulent without; stamens isomorphic, the connective with 2 lateral lobes that are deflexed anteriorly (Gleason). The leaves are more distinctly plinerved than usual in the similar species; cf. also *M. longiracemosa*. Section *Eumiconia*. F.M. Neg. 26015.

San Martín: Near Moyobamba, 7-meter tree with cream-colored flowers, 1,100 meters, *Klug 3312; 3643* (det. Gl.).—Loreto: Itaya, inundated bank, shrub or tree to 8 meters, with white flowers, *Mexia 6484* (det. Gl.). La Victoria, *Williams 2707; 2987*. Pebas, *Williams 1636*. Río Itaya, *Williams 115*. Florida, *Klug 2127*. Brazil to the Guianas and Panama. "Acano-fue-peroi" (Huitoto), "yana-panga," "bucacuru caspi."

Miconia puberula Cogn. in Mart. Fl. Bras. 14, pt. 4: 386. *pl. 78.* 1887; 856.

Similar to *M. minutiflora* but the narrowly ovate leaves somewhat cordate at base and evanescently more or less rusty-floccose-puberulent, at least on the 5 nerves beneath; calyx limb truncate or obscurely lobed, only 1 mm. long, petals 1.4 mm. long; connective very shortly spurred; style 2 mm. long.—The sometimes subsessile leaves are glabrous and chartaceous in age. A shrub 1–5 meters high with blue fruit (Ule). Section *Glossocentrum.* F.M. Neg. 26016.

San Martín: Moyobamba, 800 meters, *Weberbauer 4492* (det. Cogn.); 290. Near Moyobamba, *Klug 3362.* Tarapoto, (*Spruce; Mathews,* type colls.); *Ule 6745; 6746; Williams 5376; 5628; 5702; 6150; 6425; 7103* (mostly distr. as *M. minutiflora*).—Junín: San Ramón, *Killip & Smith 24790.* "Uchu mullaca."

Miconia pubipetala Miq. Stirp. Surinam. 50. 1850; 743. *Diplochita parviflora* Benth. in Hook. Journ. Bot. 2: 302. 1840. *Miconia parviflora* (Benth.) Cogn. in Mart. Fl. Bras. 14, pt. 4. 249. 1887, not Naud.

Younger branches, leaves beneath and calyces minutely or obscurely brown-stellate-tomentose; petioles 1.5–4 cm. long; leaves rather thin, usually drying black and lustrous above, obovate to elliptic-oblong, to 3 dm. long, about half as broad, often falcately acuminate, obtuse or rounded at base, 3–5-nerved, the outer nerves submarginal; panicles to 2 dm. long, with 2-several branches at each node; flowers 5-merous, in terminal cymules, the pedicels 2–4 mm. long; calyx ashy-tomentulose, 4 mm. long; petals narrowly oblong, to 7 mm. long, minutely scurfy; connective appendaged, that of the episepalous stamens with a few stalked glands; ovary minutely pubescent, the puberulent style to 13 mm. long, the stigma truncate. —Inflorescence bracts lacking or minute. Section *Tamonea.*

Loreto: *Williams 901* (det. Gl.). Trinidad; Guianas. "Sachi mullaca."

Miconia Pulgari Macbr. Field Mus. Bot. 4: 182. 1929.

Nearly glabrous straggling shrub with slender terete branches, these, as the petioles and peduncles, sometimes with a few crisped trichomes; petioles 8–10 mm. long; leaves entire or minutely and appressed-ciliate, oblong-lanceolate, acute at base, subabruptly and obtusely acuminate, membranous, glabrous above, sparsely pilose-hirtellous beneath only on the nerves and veins, 3-plinerved, not counting the marginal nerves, about 1 dm. long and 3 cm. broad,

the transverse veins and veinlets prominent beneath; panicles 4–6 cm. long; flowers pinkish-white, 5-merous, on pedicels 1 mm. long; calyx glabrous or slightly granulose-stellate, denticulate, nearly 4 mm. long; petals broadly obovate, 2.5 mm. long; anthers narrowly obovoid, minutely 1-pored; style 5 mm. long, the stigma somewhat capitate.—Named for Señor Francisco Pulgar of Panao. Nearly *M. pedicellata*, but that species completely glabrous. Section *Amblyarrhena*.

Huánuco: Huacachi, near Muña, *4145*, type.

Miconia pulverulenta R. & P. Syst. Veg. 1: 104. 1798; 902. *Cremanium pulverulenta* (R. & P.) D. Don ex Triana, Trans. Linn. Soc. 28: 126. 1871. *M. ramosipila* Macbr. Field Mus. Bot. 4: 185. 1929.

Branches stout, toward the terminal inflorescence more or less shortly pubescent with a sordid scurfy tomentum of plumose trichomes; petioles 1–2.5 cm. long or longer; leaves subcoriaceous, entire or obscurely undulate-denticulate, elliptic-oblong, rounded or emarginate at base, acute or acuminate, glabrous and obscurely bullate above, yellowish stellate and plumose-hirtellous (at least on nerves) beneath, the trichomes scarcely concealing the surface, 3–5-nerved with a submarginal additional fainter pair, 1–1.5 (2) dm. long, 5–7 (10) cm. wide; panicle pyramidal or sometimes nearly as broad as long, the glomerules of sessile flowers more or less approximate in spikes; calyx glabrate, 1.5 mm. long, shortly and obtusely lobed; petals obovate, 1 mm. long; style 1.5 mm. long, subclavate or apparently (my coll.) peltate.—The leaves dry a yellow-brown, a lighter greenish yellow beneath. My species has been retained by Gleason in herbarium, but I fail to find a sound basis for its separation, although the anthers are seemingly sublinear, minutely pored. Section *Cremanium*. F.M. Neg. 17144.

Huánuco: Chinchao and Huánuco, *Ruiz & Pavón*, type. Muña and Tambo de Vaca, *4321* (type, *M. ramosipila*); *4341*. Mito, *3411*.

Miconia punctata (Desr.) D. Don, Mem. Wern. Soc. 4: 316. 1823; 793. *Melastoma punctata* Desr. in Lam. Encycl. 4: 50. 1797.

A stoutly branched shrub, the upper branches, as those of the inflorescence, acutely angled and densely covered with a red-brown punctate-lepidote indument, this clothing also the leaves beneath; petioles deeply sulcate, 1–2 cm. long; leaves glabrous above, 3-nerved with also an obscure nearly marginal pair, lanceolate, entire, narrowed at each end, 10–18 cm. long, 3–6 cm. broad; panicles usually ample;

calyx 2 mm. long; petals 2.5 mm. long, style clavate, 4–4.5 mm. long, apically truncate; connective prolonged straight back and irregularly 1–3-lobed (Gleason).—Section *Eumiconia*. F.M. Neg. 38248. Illustrated, Bonpland, Melast. *pl. 40*.

Loreto: 5-meter tree with white flowers, *Klug 2126* (det. Gl.). Venezuela and the West Indies. "Ucaguiño-ey" (Huitoto).

Miconia pyrifolia Naud. Ann. Sci. Nat. sér. 3. 16: 164. 1851; 808.

Related to *M. Poeppigii;* essentially glabrous, the branches nearly terete; leaves shortly acuminate, lustrous above, 7–12 cm. long, 4–7 cm. broad; panicles 4–10 cm. long; calyx glabrous or nearly so, very shortly 5-lobed, 2.5 mm. long; petals nearly glabrous, about 2 mm. long; connective well-produced, trifidly dilated at base; style 4 mm. long, the stigma subclavate.—Very smooth or merely evanescently pulverulent on the young parts and inflorescence. Section *Eumiconia*. Illustrated, Mart. Fl. Bras. 14, pt. 1: *pl. 62*.

Loreto: Prov. Mainas, *Poeppig 2768*, part. Brazil.

Miconia quadrifolia Naud. Ann. Sci. Nat. sér. 3. 16: 223. 1851; 910.

Branches toward the tips, as the inflorescence and the leaves on the 3 nerves beneath, scurfy-tomentose, the latter 4-verticillate, sessile or subsessile, entire, oblong, long-acuminate, rounded at base, 9–12 cm. long, scarcely 3 cm. broad; panicles pyramidal, 6–8 cm. long; flowers minute, the calyx less than 1 mm. long, subsessile, subtruncate; petals subrotund, 1 mm. long; stigma punctiform.—The Weberbauer specimen is petiolate. Section *Cremanium*. F.M. Neg. 36294.

Huánuco: Casapi, *Mathews 1724*, type.—Junín: Between Huacapistana and Palca, 2,000 meters, *Weberbauer 2318* (det. Cogn.); 247.

Miconia radula Cogn. Bull. Acad. Belg. sér. 3. 14: 957. 1887; 889. *M. sphagnophila* Macbr. Field Mus. Bot. 4: 183. 1929, fide Gleason.

Branches, petioles and leaves beneath densely hirsute-setulose, the trichomes mostly enlarged at base, reddish, those of the leaf-nerves beneath often stouter; petioles 5–10 mm. long; leaves ovate-elliptic, rounded at base, obtuse or scarcely acute, rigid, densely conic-bullate-setulose above, 5-nerved (Cogniaux) or plinerved, 3.5–6 cm. long, 1.5–4 cm. broad; flowers crowded, subsessile, 5-merous, the asperous panicle a few cm. long; calyx 3–4 mm. long, the setae slender or conic-based, the lobes short, obtuse; petals suborbicular, 2.5 mm.

long; filaments and style typically glandular-pilose, the stigma peltate.—The type by André from Ecuador has 5-nerved leaves according to Cogniaux, but they are actually plinerved; Gleason, Bull. Torrey Club 58: 244 in referring here the following collections, has accepted, probably rightly, considerable variation, particularly as regards the character of the calyx pubescence and the lack of glands on filaments in the collection by Killip and Smith, elsewhere used as a specific character. *M. capitellata* Cogn., 892, of Ecuador has somewhat larger acutish leaves on petioles 1–2 cm. long, the panicle twice as long with densely capitate sessile flowers. Section *Amblyarrhena.*

Huánuco: 1-meter shrub in sphagnum, *4503* (type, *M. sphagnophila*).—Junín: Pichis Trail, (*Killip & Smith 25908*).—Amazonas: Chachapoyas, 2,400 meters, *Weberbauer 4403* (det. Cogn.); 263. Ecuador.

Miconia radulaefolia (Benth.) Naud. Ann. Sci. Nat. sér. 3. 16: 243. 1851; 818. *Clidemia radulaefolia* Benth. in Hook. Journ. Bot. 2: 309. 1840.

Branches subterete, these, as the petioles and narrow panicles, appressed to spreading pilose-setulose; petioles 1–2 cm. long; leaves oblong-lanceolate, attenuate to the acute base, membranous, shortly bullate-scabrous above, minutely subappressed-setulose beneath, the trichomes nearly concealing the minutely foveolate surface, crenulate-ciliate, shortly 3–5-plinerved, 1–2 dm. long, 3–6 cm. broad; flowers sessile, congested, the panicle 5–15 cm. long; calyx 3 mm. long, densely hirsute-pilose, the lobes short, the outer teeth just equaling the inner; petals 5 mm. long, style 7–8 mm. long.—*M. scrobiculata* Cogn., Amazonian, 817, with leaves obtuse or rounded at base, branches and calyces long-pilose, is nearly *Williams 8231* and perhaps not specifically separable, but Gleason distinguishes it by the outer calyx tooth projection 0.6 mm. beyond the sepals. Section *Eumiconia.* F.M. Neg. 17146.

Loreto: Iquitos, *Killip & Smith 27307; 29662* (det. Gl.); *Williams 8231.* British Guiana. "Mullaca mullaca."

Miconia Regelii Cogn. in Mart. Fl. Bras. 14, pt. 4: 405. *pl. 83.* 1888; 865.

Branches little compressed, with the petioles and panicles densely and minutely scurfy-puberulent; petioles 5–10 mm. long; leaves ovate-elliptic, acute at base, shortly acuminate, merely granular-scurfy, principally on the nerves, or glabrate beneath,

glabrous above, firm, 3-nerved, with also a submarginal very faint pair, 6–11 cm. long, 3–5 cm. broad; panicles ample, the branches arcuate, the flowers sessile, minutely bibracteolate; calyx 1.5 mm. long, the white petals as long, the style twice as long, slightly enlarged apically; connective simple. Section *Chaenanthera*.

San Martín: Tarapoto, *Spruce*. Brazil.

Miconia retusa Pilger, Verh. Bot. Ver. Brandenb. 47: 174. 1906. *M. Macbridei* Gleason, Bull. Torrey Club 58: 246. 1931.

Glabrous shrub with slender virgate terete branches and terminal thyrsoid panicles of white flowers borne well above the leaves, these crowded, subcoriaceous, cordate-subsessile or almost amplexicaul, ovate, entire or callous-denticulate toward the acuminate tip, 3-nerved, with an additional outer obscure pair, 5.5–7 cm. long, 2.5–3.5 (5) cm. broad; panicles 7–9 cm. long, lax in age, the branches somewhat spreading; flowers 4-merous; pedicels 2 mm. long; calyx tube campanulate, red-puncticulate, 2 mm. long, the acute teeth 1 mm. long, equaled by the appressed acute outer teeth (Gleason); petals irregularly retuse, thick, white, 2–2.5 mm. long; filaments and anthers 2 mm. long, the connective simple; style stout, finally exserted 3 mm., the stigma not at all enlarged; ovary inferior, 4-celled.—Gleason remarked regarding his species, "closely related to *M. retusa*, which has a small lax inflorescence and narrower leaves"; he did not know the flowers, and these, present in the Field Museum specimens, seem to match the description of *M. retusa;* the photograph shows a great similarity, the slight differences in leaves and inflorescence being in all probability within the natural range of variation to be expected in the species. Section *Chaenopleura*, fide Gleason. F.M. Neg. 17147.

San Martín: Tarapoto, 750 meters, *Williams 5596* (type, *M. Macbridei*).—Loreto: Cerro de Escaler, 1,100 meters, *Ule 6366*, type.

Miconia riparia Triana, Trans. Linn. Soc. 28: 117. 1871; 766.

Densely leafy, the leaves nearly linear, long-acuminate, the slender branches sordidly tomentulose with gray stellate trichomes, some longer barbellate ones intermixed; petioles 3–6 mm. long; leaves glabrate, 3-nerved, obscurely if at all denticulate, firm or thin, to 12 cm. long, 3–15 mm. broad; flowers bracteolate, verticillate in a spike 3–5 cm. long, the linear bractlets 4–5 mm. long; fruiting calyx sparsely stellate-pilose, obscurely 5-lobed; fruit black, succulent, subglobose, 4–5 mm. thick.—Section *Eumiconia*. F.M. Neg. 26025.

San Martín: Río Huallaga, *Klug 4009*.—Loreto: Yurimaguas, *Spruce 4589*, type. Pongo de Manseriche, shrub 1 meter high, fruit red, *Mexia 6220* (det. Gl.). Río Marañón Valley, *Killip & Smith 29136* (det. Gl.).

Miconia rotundifolia (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 235. 1851; 935. *Cremanium rotundifolium* D. Don, Mem. Wern. Soc. 4: 311. 1823.

Low, the stems creeping, branching, terete, shortly pilose with obscurely plumose trichomes; petioles 3–7 mm. long; leaves subcrenulate and ciliate, suborbicular, sparsely setulose above and hirtellous beneath, 5-nerved including the partial submarginal ones, nearly as broad as long, mostly 1.5–2 cm.; flowers often ternate, subsessile or some pediceled, to 3 mm. long; petals 2–2.5 mm. long, subtruncate; calyx 3 mm. long, the lobes short; fruit 5 mm. thick.—A yellow dye called "Olla-olla," made from this plant, *Bocconia frutescens*, and several others mixed together, is used by the Peruvian Indians to color their bodies (Ruiz & Pavón). Section *Chaenopleura*. F.M. Neg. 17152.

Huánuco: Playapampa, 3,000 meters, *4490* (det. Gl.). Huassahuassi, *Ruiz & Pavón; Dombey*, type.

Miconia rubens (Swartz) Naud. Ann. Sci. Nat. sér. 3. 16: 169. 1851; 921. *Melastoma rubens* Swartz, Prodr. 71. 1788.

A completely glabrous shrub 3–4 meters high with slender, obtusely tetragonous branches and oblong-elliptic, minutely denticulate, thin and pellucid leaves, these 3-nerved, with also a faint outer pair, or shortly 3-plinerved, acuminate, acute or attenuate at base, 6–9 cm. long, 2–3 cm. broad; petioles 1–1.5 cm. long; panicles 4–7 cm. long; calyces subsessile, 2 mm. broad; petals white, 0.7 mm. long; style 1.5 mm. long, the stigma peltate.—In spite of the authority for it one wonders if this identification is correct in view of the range. Section *Cremanium*.

Cajamarca: Near Hualgayoc, 2,700 meters, *Weberbauer 4105* (det. Cogn.); 259. Venezuela to Jamaica.

Miconia rubiginosa (Bonpl.) DC. Prodr. 3: 183. 1828; 823. *Melastoma rubiginosa* Bonpl. Melast. 109. *pl. 47*. 1816.

Twigs, petioles, leaves beneath and compact panicles, including the calyces, densely red-brown-tomentose with stellately branched trichomes, some of them minutely stiped; petioles thick, 2–6 mm. long; leaves ovate, shortly acuminate, entire, drying black and

lustrous above, subcoriaceous, 6–10 cm. long, 3–6 cm. broad; flowers 5-merous, crowded, ebracteolate; calyx obscurely lobed, about 3 mm. long; petals white, rounded, 2 mm. long; connective spurred posteriorly, obscurely biauricled anteriorly; style 4 mm. long; fruit black, 3–4 mm. thick.—The reddish-brown stellate tomentum is often more or less deciduous from the leaves beneath in age. Section *Eumiconia*. F.M. Negs. 17153; 36295.

San Martín: Tarapoto, *Mathews 1290; Spruce 4265*. Moyobamba, *Mathews 1289*.—Loreto: Canela Ucsha, *Ule 6738; 6739* (det. Pilger). Brazil; Bolivia to Colombia and Puerto Rico.

Miconia rufescens (Aubl.) DC. Prodr. 3: 180. 1828; 777. *Melastoma rufescens* Aubl. Pl. Guian. 1: 408. *pl. 157*. 1775.

Shrub, striking by virtue of the markedly reticulate-bullate, subsessile, oval-elliptic leaves and the almost shaggy pubescent branchlet tips, the long pubescence of barbellate trichomes extending into the narrow crowded panicle of globosely glomerate flowers; petioles rarely 5 mm. long; leaves ovate, cordate, often crenulate-denticulate, densely reddish stellate-hirsute beneath, 5–7-nerved, 8–15 cm. long, 5–10 cm. broad; panicles 1–2 dm. long; calyx densely long-pilose, 4 mm. long, minutely 5-lobed; petals white(?), glabrous, retuse, 4–5 mm. long; style to 9 mm. long; fruit subglobose, 4 mm. thick, edible according to Weberbauer.—Shrub 1–3 meters high, with lilac rose petals (Klug). Section *Eumiconia*.

Cajamarca: Prov. Jaén, 1,200 meters, *Weberbauer 6259*.—San Martín: Tarapoto, *Ule 6450* (det. Pilger); *Spruce 4266; Williams 5422; 7438*. Moyobamba (*Mathews 1288*); *Weberbauer 4495*(?) (det. Cogn.); 290; *Klug 3363* (det. Gl.).—Cuzco(?): *Gay*. Brazil to Colombia and British Guiana. "Mullaca," "sira sira."

Miconia rugifolia Triana, Trans. Linn. Soc. 28: 125. 1871; 894.

Upper branches tetragonous, scurfy-pubescent; petioles 6–8 mm. long; leaves firm, drying fragile, glabrous and bullate above, correspondingly closely foveolate beneath, where also sparsely hirtellous, 5-nerved, crenulate, lanceolate, obtuse at base, to 1.5 dm. long, 2.5–4 cm. broad; panicles pyramidal, short; calyces sessile, 1.5 mm. long, the oblong petals 1 mm. long, the style 3 mm. long; connective bituberculate anteriorly.—Section *Amblyarrhena*.

Puno: San Gabán, *Lechler 2196*, type.

Miconia Ruizii Naud. Ann. Sci. Nat. sér. 3. 16: 192. 1851; 890.

Densely but finely hirsutulous except the leaves beneath, these shortly villous-tomentose with simple, crisped trichomes, minutely

bullate above but the surface nearly concealed by the pubescence, the trichomes not at all or little enlarged at base; petioles 1–2.5 cm. long; leaves ovate, acuminate, essentially entire, 7-nerved or shortly plinerved, 10–16 cm. long, 5–9 cm. broad; flowers sessile, more or less crowded, the panicles 5–7 cm. long, about as broad, the trichomes on the branchlets and calyx harsher than elsewhere but slender; calyx lobes membranous, short, obtuse; petals broadly cordiform, 1.5 mm. long; filaments glabrous; connective simple; style 2–3 mm. long, the stigma peltate.—Aspect of a *Clidemia*. Section *Eumiconia*, fide Gleason, *Amblyarrhena*, fide Cogn. F.M. Neg. 26027.

Lima: Near Lima, *Ruiz & Pavón*, type; *Mathews 3217*.—Junín: Pichis Trail, *Killip & Smith 25628; 25748* (det. Gl.). Ecuador; Bolivia.

Miconia salicifolia (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 234. 1871; 922. *Melastoma salicifolia* Bonpl. ex Naud. l.c. *M. rosmarinifolia* Pav. ex Triana, Trans. Linn. Soc. 28: 127. 1871.

Densely leafy, shortly branched shrub well characterized by oblong-linear leaves, these glabrous above, densely rusty-scurfy-tomentose beneath, obtuse, the margins becoming revolute, 2–3.5 cm. long, only 2–7 mm. wide; petioles 2–4 mm. long; panicle racemiform, few-flowered, nodding, the flowers 4-merous, the calyx 3 mm. long, subtruncate, the petals 1 mm. long, the style 4 mm. long with thick, ovoid stigma.—The pubescence is felt-like. Section *Cremanium*. F.M. Neg. 17157.

Peru(?): *Ruiz & Pavón*.—Junín: Altos de Vitoc, *Isern 584; 574*. Ecuador; Colombia.

Miconia sanguinea (D. Don) Triana, Trans. Linn. Soc. 28: 125. 1871; 896. *Tococa sanguinea* D. Don, Mem. Wern. Soc. 4: 305. 1823. *Cremanium hispidissimum* DC. Prodr. 3: 192. 1828, et Mém. Mélast. 80. 1828. *M. hispidissima* (DC.) Naud. Ann. Sci. Nat. sér. 3. 16: 191. 1851.

Upper branches, as the petioles and panicles, spreading pilose-hispid; petioles 3–6 cm. long; leaves ovate-oblong, rounded at base, hirtellous both sides, membranous, entire or minutely denticulate, 5–7-nerved, 1.5–2 dm. long, 6–10 cm. broad; panicle broadly pyramidal, to 1.5 dm. long; pedicels 3–8 mm. long; calyx hirsute, 3–4 mm. long; petals 4–5 mm. long; filaments and style glandular-pilose, the latter stout, 6–9 mm. long.—A 3–8-meter shrub or a tree; flowers white, fragrant. Section *Amblyarrhena*. F.M. Neg. 38253.

Huánuco: Cushi, *4824;* Cuchero and Chinchao, *Dombey; Ruiz & Pavón,* type; *Poeppig 1003;* Río Isabel, *Mexia 8114; Stork & Horton 9444.*—Junín: Chanchamayo Valley, *Weberbauer 1985* (det. Cogn.); 247; *Isern 2125.*—San Martín: Valley of the Monzón, 1,200 meters, *Weberbauer 3499* (det. Cogn.); 284. "Terye."

Miconia saxatilis Macbr. Field Mus. Bot. 4: 186. 1929.

Shrub about 3 meters high, the upper branches acutely tetragonous, enlarged at the nodes and, like the petioles, peduncles and inflorescence branches, sordidly and densely stellate-pubescent; petioles 2–4.5 cm. long; leaves broadly ovate-elliptic, rather abruptly narrowed at both ends, shortly acuminate, mostly 15–18 cm. long, 7.5–9 cm. broad, entire or somewhat undulate-denticulate, membranous, glabrous and green above, paler and finely stellate-puberulent on the nerves and veins beneath, shortly 3-plinerved with an additional marginal pair; panicles densely flowered, about 8 cm. long; flowers 5-merous, subsessile; calyx glabrate, obtusely denticulate, scarcely 1 mm. long, the petals hardly half as long; anthers subcuneiform, nearly 0.5 mm. long, 2-pored; style about 1 mm. long, the stigma peltate.—Slender shrub of wet rocky upland. Section *Cremanium.*

Huánuco: Playapampa, *4881,* type.

Miconia sclerophylla Triana, Trans. Linn. Soc. 28: 119. 1871; 846.

Younger branches (these compressed) and leaves beneath densely scurfy-puberulent; petioles 1–2 cm. long; leaves fleshy-coriaceous, fragile in drying, oblong-lanceolate, acuminate, subcordate or acute at base, glabrate above, rufescent beneath, entire, 5-nerved, 6–10 cm. long, 2–3.5 cm. broad; panicle pyramidal, the sessile flowers densely glomerate on the spreading branches, 5–7 cm. long; calyx campanulate, scurfy-tomentose, 2 mm. long, the persisting limb acutely lobed; petals obovate, longer than the calyx; anthers linear, obliquely 1-pored, the simple connective gradually attenuate with the articulate filament.

Peru(?): (Herb. Fielding), perhaps by *Pavón.*

Miconia scorpioides (Schlecht. & Cham.) Naud. Ann. Sci. Nat. sér. 3. 16: 243. 1851; 782. *Melastoma scorpioides* Schlecht. & Cham. Linnaea 5: 564. 1830.

Upper branches pulverulent-stellate, strongly compressed and narrowly wing-margined alternately in opposite directions between

the nodes; leaves sessile or subsessile, narrowed to base or sometimes auriculate, obovate-oblong, apiculate or shortly acuminate, becoming glabrous above, sparsely stellate-scurfy beneath, the minute trichomes dot-like, 3-plinerved with a pair of submarginal ones, 1.5–2.5 dm. long, 5–9 cm. broad; panicles narrow, the branches usually bifid, scorpioid and secundly flowered, pulverulent; calyx 2 mm. long; petals rounded, 2.5 mm. long; style 6 mm. long; fruit broadly subglobose, lightly 10-costate.—A tree 4 meters high (Klug). Section *Eumiconia*. F.M. Neg. 17161.

Huánuco: Near Cuchero, *Poeppig 1733*.—Loreto: Lower Río Huallaga, *Williams 4266; 4617*. Florida, *Klug 2365; 2801* (det. Standl.). Brazil to Mexico.

Miconia secundifolia Cogn. Bot. Jahrb. 42: 145. 1908.

A 2-meter shrub with scarcely quadrate, stout, simple branches, the younger, as the petioles and peduncles, densely granular or papillose-stellate-puberulent; petioles 1–2 cm. long; leaves borne secundly, coriaceous, glabrous above except the puberulent midnerve, stellate-puberulent mostly only on the 5 nerves beneath where markedly reticulate veined, entire, ovate, rounded and lightly emarginate at base, shortly and obtusely acuminate, 7–10 cm. long, 4.5–5 cm. broad; panicles broadly pyramidal, 6–8 cm. long, the branches and branchlets divaricate, the 5–6-merous flowers on pedicels 1–3 mm. long; calyx broadly campanulate, the tube 4 mm. across, the small teeth remote at base, acute, 1 mm. long; petals white, obliquely obovate, fleshy, 2.5 mm. long; anthers arcuate, 1.5 mm. long; style glabrous, clavate, 3 mm. long, the stigma peltate. —Affine *M. rigida* Triana. Section *Chaenopleura*. F.M. Neg. 17159.

Amazonas: East of Chachapoyas, 2,200 meters, *Weberbauer 4427*, type.

Miconia semisterilis Gleason, Bull. Torrey Club 63: 535. 1936.

Upper branches acutely 4-angled and 2-sulcate as also the thick angled petioles—these 1 cm. long—and densely ashy-lepidote like the leaves beneath and the angled panicle branches even to the calyces, these sessile, 5-merous, scarcely lobed, about 1.5 mm. long; leaves narrowly elliptic-acuminate at both ends, often 17 cm. long, 6 cm. wide, glabrous and opaque above, papyraceous, 5-plinerved, the outer pair submarginal; panicle 8–10 cm. long; petals white, glabrous, unequally truncate, 1.8 mm. long, 1.6 mm. wide; stamens nearly isomorphic, the slender filaments 1.6 mm. long, the anthers about as long, sterile below the middle, somewhat obovate in the

terminal portion, the connective produced into 2 minute lateral lobes and 1 (rarely 2) narrowly oblong dorsal appendage; ovary free and glabrous above, apparently 3-celled; style stout, about 2.5 mm. long, glabrous, the stigma truncate.—The scales are brownish on the stems, ashy on the leaves. Suggests *M. Klugii*, in which the anthers are fertile nearly to base; the anthers are similar in form and sterile for more than half their length in *M. Pilgeriana* and *M. stellipilis* Cogn., Bull. N. Y. Bot. Gard. 4: 360. 1907, also with similar appendages to the connective but these lack the sharply angled stems and the lepidote indument; all three, as *M. semisterilis*, belong to section *Glossocentrum* (Gleason).

Loreto: Pumayacu, in forest, small tree 8 meters high, *Klug 3224*, type.

Miconia serialis DC. Prodr. 3: 182. 1828; 790.

Subterete branches somewhat, the leaves beneath thickly, rusty-floccose-tomentose; petioles 1–2 cm. long; leaves elliptic-oblong to broadly elliptic-ovate, shortly attenuate at base, acutely short-acuminate, in age glabrous and lustrous above, 5-nerved or sometimes shortly 3-plinerved, 1–2 dm. long, 4–8 cm. wide; panicles broad, to 1.5 dm. long, the branches bifid or trifid, the flowers secund, their petals obliquely retuse, 1.5–2 mm. long; calyx 2 mm. long; connective strongly dilated, basally bilobed anteriorly, tuberculate posteriorly; connective produced; style about 3 mm. long; fruit 10-sulcate, 3–3.5 mm. thick.—Common in Loreto. Like several other species, rich in tannin. Section *Eumiconia*. F.M. Neg. 17164.

San Martín: Tocache, *Poeppig 1863;* Moyobamba, *Weberbauer 4531* (det. Cogn.); 290.—Puno: San Gabán, *Lechler 2467*.—Loreto: Iquitos, *Tessmann 5391; Williams 1454; 1508; 3631; Killip & Smith 29857; Klug 36; 465*. Río Mazán, *Schunke 158* (det. Standl.). Yurimaguas, *Williams 3836; 4718; Killip & Smith 27948; Poeppig 2407b*. Bolivia to Venezuela. "Carachi-caspi," "canela de velha."

Miconia serrulata (DC.) Naud. Ann. Sci. Nat. sér. 3. 16: 118. 1851; 734. *Diplochita serrulata* DC. Prodr. 3: 177. 1828. *Chitonia macrophylla* D. Don, Mem. Wern. Soc. 4: 319. 1823. *M. macrophylla* Triana (DC.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 239. 1887.

Nearly the same as *M. bubalina*, probably not distinct, but the rounded or lightly emarginate leaves 5–7-nerved and sometimes glabrate beneath; style 11–13 mm. long.—The var. *Hostmanni* (Steud.) Cogn. has oblongish 5-nerved leaves, subabruptly acuminate. Section *Tamonea*.

Junín: Near Perené Bridge, *Killip & Smith 25297* (det. Gl.).—San Martín: San Roque, *Williams 7793* (det. Gl.).—Loreto: Iquitos, *Tessmann 3596; Williams 1481; 3647*, the var. (det. Markgr.). Mouth of Santiago, *Tessmann 4510* (glabrate form, det. Markgr.). Florida, shrub with lilac and white or white flowers, *Klug 2336; 2261* (det. Gl.). Pró, *Williams 1996*. La Victoria, *Williams 2770*. Yurimaguas, *Williams 4569*. Pebas, *Williams 1629; 1631*. Río Mazán, *Schunke 4* (det. Standl.).—Puno: *Lechler 2115*. Bolivia to the West Indies. "Difari de hoja ancha," "sesepe-o."

Miconia setinervia Cogn. Bot. Jahrb. 42: 143. 1908.

Branches obscurely quadrate, very shortly and rather sparsely setulose as the leaves beneath, principally on the nerves and veins, otherwise glabrous or the calyx obscurely puberulent; petioles 4–6 mm. long; leaves lanceolate, acute at both ends, entire, 5-nerved, rigid but extremely fragile in the herbarium, drying black above, paler beneath, with numerous transverse veins, 5–7 cm. long, 1.5–2.5 cm. broad; panicle pyramidal, 6–10 cm. long; calyx campanulate-urceolate, 1 mm. long, the short, broadly ovate teeth acute; petals whitish, obovate, scarcely more than 0.5 mm. long; filaments capillary, glabrous, as the filiform style, this 1.5 mm. long, the stigma peltate.—Allied to *M. cyanocarpa* Naud. Section *Cremanium*. F.M. Neg. 17160.

Puno: Vicinity of Tambo Yuncacoya, between Sandía and Chunchusmayo, 1,800 meters, *Weberbauer 1145*, type.

Miconia setulosa Cogn. Melast. 898. 1891.

Stoutly branched, the branches obtusely tetragonous, the younger, as the petioles and panicles, long-setose-hirsute, the petioles 3–6 mm. long; leaves lanceolate, basally subacute, obtusish, spinulose-denticulate, rigid, glabrous above, sparsely setose only on the 5 nerves beneath, 6–8 cm. long, 18–22 mm. broad; panicle thyrsoid, 5–10 cm. long, the usually 5-merous flowers crowded; pedicels 1–2 mm. long; calyx glabrous, minutely dentate, 3 mm. long; petals 2 mm. long; anthers bipored; style 3 mm. long, apically truncate; fruit black, 3.5–4 mm. thick.—Section *Cremanium*.

Puno: Tatanara (*Lechler 2637*, type).

Miconia spennerostachya Naud. Ann. Sci. Nat. sér. 3. 16: 187. 1851; 801. *M. nectaria* Macbr. Field Mus. Bot. 4: 190. 1929. *M. Aspiazui* Macbr. l.c.

Similar to *M. pauciglandulosa* but usually at once separable from that and other species by the presence of one to several cup-like

appendages, usually somewhat cone-shaped at base on the petioles and leaf bases above; petioles sometimes several cm. long, the leaves often shortly decurrent on them; flowers subsecund; calyx limb indistinctly lobed; connective not or scarcely produced, eglandular; petals obliquely subtruncate, 2 mm. long. The nectaries were not previously described.—Section *Eumiconia*. F.M. Neg. 26030.

Junín: La Merced, Hacienda Schunke, slender tree, *5738* (type, *M. nectaria*). La Merced, *5586* (type, *M. Aspiazui*).—San Martín: Moyobamba, *Mathews 1305*, type. Pongo de Cainarache, 5-meter tree, the flowers white, *Klug 2620* (det. Standl.).—Loreto: Pebas, *Williams 1686* (det. Gl.). Yurimaguas, *Killip & Smith 28131* (det. Gl.). Bolivia.

Miconia stelligera Cogn. in Mart. Fl. Bras. 14, pt. 4: 275, *pl. 56*. 1887; 778.

Allied to *M. barbinervis* but often less pubescent, the thin leaves glabrate above, to 2.5 dm. long, 1 dm. wide; calyx shortly stellate-hirtellous and petals stellate-scurfy without, subrounded or apiculate; style 7–8 mm. long, the stigma truncate.—The stalked stellate pubescence is present in greater or less degree but mostly on the branches and petioles; leaves, except for the 3 principal nerves beneath, often glabrate. Section *Eumiconia*. F.M. Neg. 17171.

San Martín: Pongo de Cainarache, 2.5 meters high, *Klug 2629* (det. Gl.).—Junín: Chanchamayo Valley, *Schunke 398*.—Loreto: Yurimaguas, *Poeppig 2377 pt.; Ule 6265* (det. Pilger). Brazil. "Sira sira," "mullaca."

Miconia stellipilis Cogn. Bull. N. Y. Bot. Gard. 4: 360. 1907.

Younger branches, petioles and peduncles more or less densely stellate-puberulent; petioles 5–12 mm. long; leaves ovate-oblong, firm, rounded at base, caudately acuminate, entire, glabrous above at maturity, minutely stellulate on the 5 nerves and on the veins beneath or apparently glabrate, 8–16 cm. long, 3.5–6.5 cm. wide; panicles mostly branched; calyx campanulate, stellate-puberulent typically, in the Peruvian plant nearly glabrous, 1 mm. long and broad, sessile; petals ovate, obtuse, 1 mm. long; anthers as in *M. Pilgeriana*.—The following collection may be distinct from the Bolivian type, not seen, which is, according to description, more pubescent, the trichomes papillose-stellate as in the apparently closely related *M. dolichorrhyncha* Naud.

Cuzco: Marcapata Valley near Tio, 1,900 meters, *Weberbauer 7852*. Bolivia.

Miconia stenostachya [Schrank & Mart.] DC. Prodr. 3: 181. 1828; 789. *Melastoma stenostachyum* Schrank & Mart. ex DC. l.c. in syn.

Near *M. argyrophylla,* the similarly bicolored leaves (green above, white appressed-lanate beneath) merely acute or shortly and obtusely acuminate, obscurely undulate-denticulate, and the connective not obviously produced if at all, minutely tubercled posteriorly, slightly bilobed anteriorly. The calyx becomes 10-costate, similar to *M. albicans,* differing in the connective.—Section *Eumiconia.*

Huánuco: Chinchao, *Ruiz & Pavón.* Casapi and Cuchero, *Poeppig 1437.*—San Martín: Near Tarapoto, *Ule 6458* (det. Pilger); *Williams 5423; 5629; 5678; 6330; 6419; 6427* (det. Gl.). Valley of Monzón, *Weberbauer 3475* (det. Cogn.); 284. Near Moyobamba, 1-meter shrub, the flowers yellow, *Klug 3265* (det. Gl.).—Ayacucho: *Killip & Smith 22705* (det. Gl.). Bolivia to Mexico and the West Indies. "Caracha caspi."

Miconia subglabra Cogn. in Mart. Fl. Bras. 14, pt. 4: 412. 1888; 885.

Branches slender, subterete, as the petioles and peduncles, minutely or granularly stellate-puberulent; petioles 1–1.5 cm. long; leaves oblong-elliptic, lanceolate, subrotund at base, shortly acuminate, rather firm, glabrous (or the midnerve scurfy above) except for a few scattered setae on the nerves beneath, 5-plinerved, the outer 2 nerves fainter or the nerves sometimes nearly basal, 1–1.5 dm. long, 3–4.5 cm. broad; flowers glomerate, sessile, the rusty puberulent panicles 7–10 cm. long; calyx distinctly lobed, 3 mm. long; petals suborbicular, 2 mm. long; filaments and style eglandular, the latter 4–5 mm. long, the stigma subpeltate; connective not produced anteriorly, subbicalcarate.—The leaves dry pale; the calyx is thickly granular-scurfy. Section *Amblyarrhena.* F.M. Neg. 17174.

San Martín: Tarapoto, *Spruce 4842,* type.

Miconia Terera Naud. Ann. Sci. Nat. sér. 3. 16: 196. 1851; 875.

Completely glabrous and similar to *M. pedicellata;* leaves elliptic, shortly acuminate, thin but firm, 1.5–2 dm. long, 6–7 cm. broad; petioles 1–3 cm. long; calyx (2) 3–4 mm. long, shortly and obtusely 5-lobed; petals 2–2.5 mm. long, oblong-elliptic or slightly obovate, retuse; style 3 mm. long, scarcely clavate; anthers 1.5 mm. long.—The Junín specimens, with only blue fruits, are not surely this species. Tree 3–5 meters high. Section *Amblyarrhena.* F.M. Neg. 29506.

Huánuco: Chicoplaya, *Ruiz & Pavón*, type; *Dombey;* (*Lechler 2526*).—Junín: Vitoc, *Isern 2342*. La Merced, 700 meters, *Killip & Smith 23520; Schunke 103; 104*. San Ramón, *Killip & Smith 27444; 24738*. Hacienda Schunke, *Killip & Smith 24644*.

Miconia ternatifolia Triana, Trans. Linn. Soc. 28: 118. 1871; 849.

Slender subterete branches, petioles, the 3 leaf nerves and the panicles a little puberulent-scurfy or glabrate; petioles 1–4 cm. long; leaves at least in part as the panicle branches ternate, the leaves ovate-elliptic, rounded or acute at base, acuminate, 8–15 cm. long, 2.5–5 cm. wide, membranous, glabrous at least above, the marginal pair of nerves or veins obsolete; panicle ample, the ebracteolate fasciculate flowers on pedicels 1–2 mm. long; calyx hemispheric, truncate, 1.5 mm. broad; petals scarcely 1 mm. long, even under a lens barely puberulent; anthers and filaments subequal, the connective shortly calcarate posteriorly; style 2 mm. long, somewhat attenuate toward the tip; fruit black, 6–8 seeded, 3 mm. thick.—Here would key *Williams 2627* from La Victoria, apparently a new species, the anthers strongly refracted, i.e. the filaments strongly geniculate and recurved below the anthers. Section *Glossocentrum*. F.M. Neg. 26037.

Junín: La Merced, *5259; 5344*.—Amazonas: Chachapoyas and Sasuya, *Mathews 1720; 3221*. Coroico St. Jan (*Pearce*). Huacapistana, *Killip & Smith 24156*.—San Martín: Tarapoto, *Williams 6393*. San Roque, *Williams 7054; 7222; 7676*. Bolivia.

Miconia Tessmannii Markgr. Notizbl. Bot. Gart. Berlin 9: 266. 1925.

Small glabrous shrub with slender nodding terete branches, elliptic 3-nerved (the marginal nerves obsolete) leaves and sessile 4-merous flowers, these mostly ternately borne at the ends of the small sparsely branched open nodding panicles; petioles 1.5–2 cm. long; leaves membranous, pale green beneath, subpellucid, abruptly and obtusely acuminate, rounded to the acutish base, obscurely crenulate, 12–16 cm. long, 6–8 cm. broad; calyx glabrous, cylindrical, 5 mm. long, the mucronulate triangular teeth 1 mm. long; petals white, reflexed, 2 mm. long, obcordate; stamens 8, glabrous; ovary glabrous, 4-celled; style 5 mm. long, the stigma truncate; fruit oblong-globose, coriaceous-baccate, 3–4 mm. thick.—Allied to *M. punctata* with 5-merous flowers and longer petals. Section *Tamonea*. F.M. Neg. 17178.

Loreto: Yarina-cocha, middle Ucayali, *Tessmann 3418*, type.

Miconia tetrasperma Gleason, Bull. Torrey Club 58: 237. 1931.

Younger branches somewhat flattened, pubescent as the inflorescence with a very close pulverulence, this similar but sparser on the 3 leaf nerves beneath; petioles angular, 8–12 mm. long; leaves firm, drying brown beneath, dark above, glabrous and somewhat lustrous, entire, elliptic-oblong, subacute at both ends, mostly 12 cm. long, 5 cm. broad; panicles sessile, freely branched, 6–10 cm. long; apparent pedicels up to 1.5 mm. long, minutely bibracteolate apically; flowers sessile, 5 (–6)-merous; calyx broadly campanulate, uniformly stellate, continuous and almost closed in bud, split at anthesis into 2–4 irregular lobes, these soon deciduous; petals narrowly elliptic, acute, reflexed, 2.5 mm. long, minutely scurfy distally; stamens dimorphic; filaments slender, the anthers linear, the longer 2 mm. long; connective produced into 1 dorsal and 2 lateral lobes; ovary 4-celled, 1 ovule in each cell; style glabrous, 3 mm. long, the stigma truncate.—A shrub or small tree with spherical 4-seeded berries, with the acute petals of and allied to *M. eugenioides*, with 5 sepals, about 10 ovules in each cell. Section *Eumiconia*, also suggests Section *Glossocentrum*.

Loreto: Iquitos, *Williams 1520; 3693; 3757; Klug 265; 591.* Brazil.

Miconia theaezans (Bonpl.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 419. 1888; 923. *Melastoma theaezans* Bonpl. Melast. 17. *pl. 9.* 1816.

Glabrous, slender branches usually subterete; petioles 1–2 cm. long; leaves oblong-elliptic, lanceolate, rounded or acute at base, acuminate, sometimes minutely toothed, 3-nerved or slightly 3-plinerved, also often with a more or less distinct marginal pair, usually 6–15 cm. long, about a third as broad; panicles about as long as broad, the branches often arcuate-ascending, the flowers subsessile; calyx 1.5 mm. long, more or less distinctly 5-lobed; petals yellowish-white, 1–1.5 mm. long, somewhat retuse.—The only Peruvian species in Section *Cremanium* with 4-pored anthers. The following varieties are scarcely noteworthy; var. *longifolia* (Cogn.) Macbr. Field Mus. Bot. 4: 187. 1929, leaves intense green, paler beneath, shortly acuminate, the base attenuate; var. *tetragona* (Cogn.) Macbr. l.c., upper branches acutely tetragonous; leaves drying yellowish, longish-acuminate, 7–10 cm. long, 2.5–4 cm. broad; var. *vulgaris* Cogn. ex Hoehne, Anex. Mem. Inst. Butantan 1, pt. 5: 151. 1922, branches subterete, leaves drying yellowish, basally obtusish, shortly and obtusely acuminate, 5–8 cm. long, 2.5–4 cm. broad. F.M. Neg. 17165.

Huánuco: Near Cuchero, *Dombey; Poeppig 1227; Ruiz & Pavón,* var. *tetragona;* also *Poeppig,* without number, var. *longifolia.* Pampayacu, *5038,* var. *tetragona.*—Junín: Chanchamayo Valley, *Schunke 271; 281,* var. *longifolia.* Huacapistana, *Killip & Smith 24490.*—Puno: *Lechler 2067,* var. *vulgaris.* Without locality, *Mathews 1297; 1725.* Widely distributed in South America.

Miconia thyrsoidea (D. Don) Naud. Ann. Sci. Nat. sér. 3. 16: 244. 1851; 934. *Cremanium thyrsoideum* D. Don, Mem. Wern. Soc. 4: 312. 1823. *M. thyrsiflora* Triana, Trans. Linn. Soc. 28: 130. 1871.

Stems flexuose, decumbent-ascending, the branches scurfy-tomentose; leaves ovate-lanceolate, acute, entire, but minutely remotely ciliate-denticulate, glabrous and lustrous above, pilose on the 3 nerves beneath; flowers nodding, crowded in a nearly simple thyrse, 4-merous; petals white, less than 2 mm. long.—Otherwise unknown; probably should be included in *M. nitida. M. flavescens* Cogn., 930, of Bolivia, with 5-merous flowers, glabrous calyx, would be sought here and might be a 5-merous form. Section *Chaenopleura.* F.M. Neg. 29507.

Peru(?): *Ruiz & Pavón.*

Miconia tiliaefolia Naud. Ann. Sci. Nat. sér. 3. 16. 151. 1851; 784.

Openly branched shrub with suborbicular cordate leaves that are green and glabrous above, closely rusty-stellate lepidote beneath, as also the somewhat flattened upper branches, elongate petioles and long narrow panicles, even to the calyces; leaves at base often with overlapping lobes or the sinus narrow, 9-nerved, 8–14 cm. long and about as broad; panicles to 2 dm. long, the branches short, usually bifid, the flowers secund; petals white, obliquely retuse, 3 mm. long; style 4 mm. long.—Section *Eumiconia.*

Junín: La Merced, *5331; Schunke 335; 339; 362; 1782.* San Ramón, *Killip & Smith 24792* (det. Gl.). Bolivia.

Miconia Tiri Triana, Trans. Linn. Soc. 28: 127. 1871; 908. *M. pulverulenta* DC. Prodr. 3: 190. 1828, not Ruiz & Pavón.

Twigs toward their tips, petioles, panicles and leaves beneath rusty-cinereous with a dense almost velvety indument of fine stellate pubescence; petioles 1 cm. long; leaves oblong-elliptic, acutish or acute, glabrous above, firm, scarcely or somewhat sinuate-denticulate, 3-nerved, with also a fainter submarginal pair, the reticulate veins impressed on the upper surface, 8–11 cm. long, 3–4 cm. wide; flowers

congested in a thyrsoid panicle 6–8 cm. long, sessile, ebracteolate; calyx obscurely lobed, broadly campanulate, 2.5 mm. long; petals retuse, 2 mm. long; anthers obversely oblong; style 4 mm. long.—The compact pubescence is deciduous from the upper obtusely quadrate branches and from the calyces. Section *Cremanium*. F.M. Neg. 26039.

Junín: Between Huacapistana and Palca, *Weberbauer 1777* (det. Cogn.); 247. Huassa-huassi, *Ruiz & Pavón; Dombey*, type. Chanchamayo, *Isern 2100*. "Tiri."

Miconia tomentosa (Rich.) Don, Mem. Wern. Soc. 4: 316. 1823; 750. *Melastoma tomentosa* Rich. Act. Soc. Hist. Nat. Paris 109. 1792.

Similar to *M. amplexans;* leaves firmer, broadest below the middle, long-cuneate to the narrow base, sessile or short-petioled; calyx about 5 mm. long; connective prolonged into 2 glandular-pubescent lateral lobes; style 13–15 mm. long.—After Gleason, Bull. Torrey Club 59: 367. 1932, and Carnegie Inst. Wash. Publ. 522: Misc. Pap. 20: 357. 1940. Probably, as Gleason suggests, this is the earlier name for *M. amplexans*, sens. lat., which compare.

Peru (cf. remarks above). Cuba and Central America to southern Brazil and Bolivia.

Miconia Traillii Cogn. in Mart. Fl. Bras. 14, pt. 4: 242. 1888; 736.

Allied to *M. amazonica;* petioles 3–5 cm. long; leaves narrowly ovate, subrounded but not emarginate at base, membranous, 5-nerved, to about 2 dm. long, 8–12 cm. broad; panicles contracted, to 1.5 dm. long, the bracts only 2–3 mm. long; calyx 6–7 mm. long; petals 5 mm. long.—Section *Tamonea*. F.M. Neg. 36303.

Loreto: Pebas, *Williams 303; 1629; 1631;* referred here tentatively (Gleason). Brazil.

Miconia trichocaula Macbr. Field Mus. Bot. 4: 189. 1929.

Much-branched shrub, the branches, branchlets and petioles densely reddish-pubescent with firm spreading trichomes 2–3 mm. long and short scurfy-plumose ones intermixed; petioles 5–8 mm. long; leaves abundant, obscurely repand-denticulate, submembranous, rounded-elliptic, not at all acute, glabrous and smooth above, slightly scurfy only on the 3 nerves beneath, mostly 2 cm. long, 1.5 cm. broad; racemes 1–2 cm. long, pseudoaxillary, few-flowered; pedicels 2–3 mm. long; flowers 4-merous, somewhat nodding; calyx

glabrous, 4-denticulate, nearly 2 mm. long; petals suborbicular, barely 1.5 mm. long; anthers obovoid, style scarcely 1.5 mm. long, the stigma peltate.—Near *M. bullata*, which however, from a photograph seems to lack the conspicuous long setae and to be much more bullate. Section *Chaenopleura*.

Piura: Above Huancabamba, *Weberbauer 6094*, type.

Miconia trichogona Macbr. Field Mus. Bot. 4: 187. 1929.

Upper terete branches glabrous except at the nodes where conspicuously setose; petioles sulcate and densely setose-pilose above, 1.5–2 cm. long; leaves ovate, obscurely denticulate and subappressed-ciliate, shortly acuminate, subcordate at base, 9–13 cm. long, 4–5 cm. broad, minutely and sparsely scabrous above, the 5–7 nerves more or less pilose, drying yellowish green, glabrous, often reddish beneath; panicles pyramidal, about 1 dm. long, pedicel to 1 mm. long; bracts subscarious, ciliate apically, nearly 5 mm. long; calyx distinctly 5-lobed; fruit about 5 mm. thick.—Flowers unknown but apparently Section *Cremanium*.

Huánuco: Hacienda Villcabamba, Río Chinchao, *5178*.

Miconia trichrona Macbr. Field Mus. Bot. 4: 183. 1929.

Branches and petioles densely clothed with firm, crisped, more or less spreading trichomes; petioles 1.5–2 cm. long; leaves rigid, minutely crenulate, ovate or elliptic-ovate, rounded at base, somewhat narrowed to the broadly obtuse tip, mostly 8 cm. long, 4–5 cm. broad, bullate-setose above, shortly and densely villous-hirtellous with crinkly trichomes beneath, 5–7-nerved, the nerves rather prominent on both sides; panicles about 7 mm. long, the sessile flowers glomerulate at the tips of the branches; calyx minutely denticulate, shortly and densely setulose, about 2 mm. long; petals nearly 2 mm. long; filaments glabrous; style 4 mm. long, sparsely pilose, the stigma minutely capitate.—*M. capitellata* Cogn., 892, with distinctly plinerved leaves, seems otherwise to be very similar. Section *Amblyarrhena*.

Cajamarca: Above Tabaconas, *Weberbauer 6309*.

Miconia triplinervis R. & P. Syst. 1: 105. 1798; 767.

Quadrate and narrowly 4–6-winged branches, as the leaves beneath on the nerves, minutely and sparsely stellate-puberulent; petioles to 1 cm. long; leaves rather broadly lanceolate, decurrent at base, gradually acuminate, 1.5–2.5 dm. long, 5–8 cm. broad, only 3-nerved, the 2 outer nerves submarginal; flowers in small clusters

on a simple slender spike, 1–1.5 dm. long; calyx 2–3 mm. long, the limb truncate or obscurely lobed; petals white, cordiform-obovate, 2 mm. long; style short, scarcely included. Leaves thin, the nerves sometimes starting above the base.—Mature fruit black, eaten by birds (Mexia). Section *Eumiconia*.

Ayacucho: Estrella, *Killip & Smith 23090*.—Junín: Chanchamayo Valley, 1,000 meters, *Weberbauer 1806* (det. Cogn.); 282.—Huánuco: Cuchero, *Ruiz & Pavón; Poeppig; 1553*.—San Martín: Near Moyobamba, *Klug 3381* (det. Gl.). San Roque, *Williams 6958* (det. Gl.).—Loreto: Cerro de Canchahuaya (*Huber 1438*). Pongo Manseriche, *Mexia 6361; 6109* (det. Gl.). Yurimaguas, *Williams 4950; 5094; 5278; 5343; Killip & Smith 28805*. Mexico; Jamaica; Ecuador. "Chinchaque-ubiambo."

Miconia Urbaniana Cogn. Bot. Jahrb. 42: 139. 1908.

Allied to *M. calvescens* but less pubescent, very finely stellate-scurfy, leaves usually 7-nerved, the nerves and veins extremely prominent beneath, petioles 6–10 cm. long, and, especially, the connective slightly glandular-pilose.—The leaves are broader, rounded or distinctly emarginate-cordate at base, to 3.5 dm. long, 17–22 cm. broad; style 8–10 mm. long. Section *Eumiconia*. F.M. Neg. 17182.

Cuzco: Santa Ana, 1,300 meters, *Weberbauer 5012*, type.

Miconia vaccinioides (Bonpl.) Naud. Ann. Sci. Nat. sér. 3. 16: 233. 1851; 922. *Melastoma vaccinioides* Bonpl. Melast. 15. *pl. 8*. 1816. *Cremanium vaccinioides* (Bonpl.) D. Don, Mem. Wern. Soc. 4: 312. 1823.

A small bushy or compact much branched glabrous shrub with vaccinium-like leaves and many nodding panicles; petioles 1–3 mm. long; leaves narrowly ovate-elliptic, obtuse or rounded both ends, subcoriaceous, 5–8 (12) mm. long, 3–5 mm. broad; pedicels articulated, 2–4 mm. long; calyx 3–4 mm. long, the teeth minute but broad; petals white, yellow-punctate, 3 mm. long; style 4–5 mm. long, the stigma peltate.—Section *Cremanium*.

Cajamarca: Micuipamba, *Bonpland*, type. Near Hualgayoc, 3,400 meters, *Weberbauer 3998;* 261.—Piura: Prov. Huancabamba, *Weberbauer 6087*.

Miconia vismioides Triana, Trans. Linn. Soc. 28: 124. 1871; 886.

Upper branches, these obtusely tetragonous, petioles, panicles and calyces stellate-puberulent as also the membranous leaves

beneath; petioles 1.5–2 cm. long; leaves oblong-lanceolate, acute at base, acuminate, usually entire, shortly 5-plinerved, 8–12 cm. long, 2–4 cm. broad; flowers subsessile, the panicles 5–7 cm. long; calyx subtruncate, 2 mm. long; petals suborbicular, 1–1.5 mm. long; style 1.5 mm. long, connective simple, the stigma truncate, eglandular as also the filaments.—Without data except "Peru or Brazil." Section *Amblyarrhena*. F.M. Neg. 36840.

Peru(?): Type, Herb. Boissier.

Miconia vitiflora Macbr. Field Mus. Bot. 4: 187. 1929.

Branches and branchlets of the broadly pyramidal panicles early pubescent, especially at the nodes, with long plumose trichomes, finally glabrous, obtusely quadrate or subterete; petioles often 6–11 cm. long, densely covered with pale brownish, crisply plumose trichomes mostly 3–5 mm. long; leaves subrotund or subcordate-ovate, abruptly, shortly and obtusely acuminate, 1.5–2 dm. long, 1–1.5 dm. wide, submembranous, deep green and glabrous above, more or less purplish and, on the reticulate veins and 7 nerves, shortly stellate-plumose beneath; flowers 5-merous, the pedicels scarcely 1 mm. long; calyx glabrous, acutely denticulate; petals less than 1 mm. long; connective shortly produced, minutely bituberculate anteriorly; style 1 mm. long, the stigma peltate; fruit nearly 4 mm. thick.—The flowers are apparently subdioecious. Section *Cremanium*.

Huánuco: Hacienda Villcabamba, *5165*, type.

Miconia vittata (Linden & André) Cogn. Melast. 729. 1891. *Clidemia vittata* Linden & André, Ill. Hort. 22: 152. *pl. 219*. 1876.

Branches stout, slightly compressed above, the younger densely stellate-tomentose as also the thick petioles, these 1.5 to 3 cm. long; leaves ovate, very shortly and obtusely acuminate, slightly emarginate at base, 5-nerved, glabrous above, sparsely stellate-puberulent beneath, 2–3 dm. long, 12–17 cm. wide; panicles terminal and axillary, rather compact, 5 to 6 cm. long; calyx tube 4–5 mm. long, glabrous, the minute and obtuse lobes densely pilose dorsally; petals oblong, rounded apically, 5 mm. long; stamens subequal, the anthers 5 mm. long, the cells undulate, the connective minutely tuberculate on the back; style 8 mm. long.—Known only in cultivation; the leaf midrib is conspicuously bordered by white. Section *Eumiconia*. Illustrated, Ill. Hort. 22: *pl. 219;* Ill. Gartenz. 21: *pl. 3*.

Peru: (*Roth*, on the Huallaga).

Miconia Wagneri Macbr. Field Mus. Bot. 4: 179. 1929.

A shrub or small tree, the upper branches, petioles and peduncles densely puberulent with appressed rusty trichomes that are stellately branched apically; petioles 1.5–2 cm. long; leaves broadly ovate-elliptic, rounded at base and to apex where acute, 1.5–2.5 dm. long, 8–12 cm. wide, strongly 5-nerved (not counting an obscure marginal pair), entire or remotely callose-repand-denticulate, membranous, glabrous above, beneath on the nerves and the conspicuously reticulate veins more or less densely stellate-pubescent; flowers sessile, 4-merous, solitary or more or less glomerulate at the ends of the branches; calyx tube finally glabrous, 1.5 mm. long, the chartaceous limb early closed, irregularly rupturing; petals green, nearly 2 mm. long, oblong-obovate; anthers shortly spurred posteriorly; style 5 mm. long.—Section *Laceraria*. Named for Mr. William Wagner of Lima and Viso. Cf. *M. Duckei*.

Junín: Chanchamayo Valley, *5718*, type; also *Schunke 355*. Bolivia.

Miconia Weberbaueri Cogn. Bot. Jahrb. 42: 144. 1908.

Shortly setulose at the slightly enlarged nodes of the stout obtusely 4-angled branches, otherwise glabrous; petioles 4–6 cm. long; leaves ovate, rounded to minutely emarginate at base, shortly and acutely acuminate, remotely subulate-denticulate, subcoriaceous, 15–18 cm. long, 9–11 cm. broad, the 7 nerves and numerous veins very prominent beneath; panicle broadly pyramidal, 2 dm. long, the branches widely spreading; flowers 5-merous, sessile, in minute dense glomerules subtended by small scarious caducous bracts; calyx urceolate, 1.5 mm. long, the minute ovate teeth acute; petals obscurely purple, irregularly obovate, 1 mm. long; filaments capillary, 1.5 mm. long, the glabrous style filiform, 2.5–3 mm. long, the stigma semiglobose.—Affine *M. Lehmannii* Cogn. of Colombia and *M. clathrantha*. Section *Cremanium*. F.M. Neg. 17185.

Huánuco: Southwest of Monzón, at 2,500 meters with other indurate-leaved shrubs, *Weberbauer 3396*, type.

Miconia zubenetana Macbr., spec. nov.

Ramis obtuse 4-angulatis et leviter sulcatis; ramulis petiolis ramulisque inflorescentiarum dense fulvo-stellato-furfuraceis; petiolis 3 cm. longis; foliis rotundo-ellipticis plus minusve obscure denticulato-crenulatis, basi rotundatis vel paullo angustatis et fere acutis; apice caudato-acuminatis, 2.5 dm. longis, 1.5 dm. latis vel

superioribus 15 cm. longis, 7 cm. latis, firmo-chartaceis supra glabris, subtus praecipue ad nervos dense, ad venas venulasque minutissime et parce stellatis, 5–7-nerviis; nervis cum nervalis transversalibus satis prominentibus imprimis subtus; paniculis 2.5 dm. longis vix 1 dm. latis; floribus plerumque 5-meris sessilibus vel subsessilibus, confertis; calyce turbinato-campanulato, dense stellato-furfuraceo demum glabratis acute lobato; petalis obovatis 2 mm. longis; staminibus 10, filamentis gracilibus directis vel sub apicem geniculatis; antheris lineari-oblongis obtusis poro lato dehiscentibus; connectivo simplice vel minutissime bituberculato; stylo fere 4 mm. longo, stigmate capitato.—Apparently Section *Glossocentrum* but the combination of large denticulate leaves and small flowers not seen in any other Peruvian species in that section or in *Eumiconia*.

Loreto: Mouth of Río Zubineta, 3-meter tree in clearing, *Klug 2208*, type. "Aceino-fuy," "pero-ey" (Huitoto).

34. **ICARIA** Macbr.

A nearly glabrous or slightly scurfy trailing or ascending shrub with 3-nerved leaves and medium sized flowers borne in terminal, loosely racemose panicles. Calyx limb strongly dilated and persistent in fruit. Filaments very broadly winged. Anthers short, subtended laterally by 2 erect wing-like appendages, these irregularly 1- or 2-toothed apically.—Ex character, distinct technically from *Miconia* section *Chaenopleura*, some species of which it resembles in habit, but none, so far as known, exactly; in all probability should be included in *Miconia*.

Icaria fictilis Macbr. Field Mus. Bot. 4: 191. 1929.

Branchlets and petioles obscurely scurfy, the latter 1–1.5 cm. long; leaves broadly ovate-elliptic, glabrous or nearly, subcordate at base, scarcely acute, 3–4 cm. long, 2–2.5 cm. wide, the 3 nerves not prominent beneath, the transverse veins not at all reticulating; panicles racemiform, 5–7 cm. long, shortly scurfy-stellate; pedicels elongate; calyx 7 mm. long, the tube turbinate, the dilated limb 4-lobed, the broad ovate lobes with tubercled outer teeth; petals about 5 mm. long, 6 mm. broad; stamens nearly 6 mm. long, the filaments 2 mm. long, the anthers obovoid, the appendages 1.5 mm. long; style 4 mm. long, the stigma peltate; fruit at least 5 mm. thick, crowned by the calyx lobes.—A laxly branched shrub in patches on steep shady slopes.

Huánuco: Tambo de Vaca, *4431*, type.

35. CATOCORYNE Hook. f.

Creeping slender-stemmed pilose herb with small remote 3–5-nerved leaves and solitary long-peduncled, 5-merous flowers. Calyx tube broadly turbinate, glabrous. Anthers small, the connective not produced, but with a dilated descending appendage. Ovary semi-adherent, many-ovuled. Fruit unknown, possibly baccate.

Catocoryne linnaeoides Hook. f. in Benth. & Hook. f. Gen. Pl. 1: 765. 1867; 938.

Branches filiform, minutely pilose; petioles 1–3 mm. long; leaves remote, firm, ovate-rotund, 2–5 mm. long and broad, glabrous above, shortly pilose beneath; peduncle 3–4 cm. long; calyx about 2 mm. long, the lobes half as long; petals 7–8 mm. long.

Peru(?): Without locality (*Lobb*). Colombia; Ecuador(?).

36. HETEROTRICHUM DC.

Hispid-pubescent shrubs with rather large flowers borne in terminal or terminal and lateral panicles and essentially *Tococa* except that the ovary is 6–12-celled. It also approaches *Clidemia* in aspect, but may be distinguished by the larger flowers in terminal panicles and by the curved anther-cells.

Branches setulose..... *H. octonum.*

Branches glandular-pilose..... *H. polyandrum.*

Heterotrichum octonum (Bonpl.) DC. Prodr. 3: 173. 1828; 954. *Melastoma octona* Bonpl. Melast. 7. *pl. 4.* 1816.

Shrub with long-setulose branches and 7–9 cordate-ovate leaves tomentulose beneath; calyx tube 4–5 mm. long, the interior lobes obscure, the 8 outer 2–3 mm. long; petals white, 8–9 mm. long.—The var. *brasiliensis* Cogn. has the leaves sparsely stellate beneath.

San Martín: Tarapoto, *Ule 6625; Spruce 3934.* Lamas, (*Mathews 1304*).—Río Acre: *Ule 9673,* the var. Brazil to Mexico.

Heterotrichum polyandrum (Benth.) Gleason, Bull. Torrey Club 52: 378. 1925. *Miconia Benthamiana* Triana, Trans. Linn. Soc. 28: 102. 1871; 753. *Clidemia polyandra* Benth. Bot. Voy. Sulphur 95, *pl. 34.* 1844.

Branches and inflorescence even to the calyces pubescent with short glandular tipped trichomes and longer weaker eglandular ones intermixed; leaves ovate-cordate, shortly acuminate, 7–9-nerved, glabrate but scabrous above, sparsely hirtellous, especially on the nerves beneath, rather thin, 5–15 cm. long, 3–10 cm. broad or the

younger often smaller; panicles few-flowered, 3–6 cm. long; pedicels 1–3 mm. long; calyces 4 mm. long, obscurely lobed; petals 8, white, roseate dotted without, 4 mm. long; anthers about 30, 2.5 mm. long; style to 6 mm. long.—Shrub with the aspect of a *Clidemia* with soft hispid leaves. F.M. Neg. 17019.

Puno: San Gabán, *Lechler 2350*.—Loreto: Pebas, *Williams 1905* (distr. as *Leandra solenifera*). To Colombia. "Mullaca."

37. TOCOCA Aubl.

Microphysca Naud.

Shrubs, often tall, or trees, glabrous or the stems pilose-hispid or barbate especially at the nodes. Leaves usually thin and somewhat unequal in size, often the leaf base or the petiole more or less inflated (with formicaria or vesicles). Inflorescence paniculate or racemose and open or spicate and congested, terminal or rarely also axillary. Calyx tube winged or terete, truncate or the sepals more or less conspicuously provided with outer teeth. Stamens similar or nearly, the anthers slender to plump-oblong, usually curved; filaments stout to filiform, the connective raised and often tumid at base. Ovary inferior to free, apically setose or annulate, 3–5-celled.

Ants habitually live in the stems and bladder-like leaf or petiole vesicles of various species. R. W. G. Hingston in "A Naturalist in the Guiana Forest" (London, 1932) reports, acc. to Graham, Fl. Kartabo, Br. Guian. 213. 1934, that "the swollen petioles are occupied by ants of the genus *Pheidole*, subgenus *Elasmopheidole*. With the ants live clusters of coccids as ant cattle together with reddish mites and minute fish-insects which act as scavengers." Important original observations were made by Spruce, Notes of a Botanist on the Amazon 1: 385–411; cf. note under *Clidemia*.

Several of the species recognized, especially those based on the pubescence of style and corona, are doubtfully valid. The following key is entirely artificial. Species with axillary inflorescences simulate *Maieta* but are distinguishable by the character of the anthers.

Calyx tube narrowly winged or at least lobes provided with a dorsal flange.

Calyx wings laterally extended, fin-like, into an acute tooth.

Flowers 5-merous.....*T. gonoptera.*

Flowers 4-merous.....*T. quadrialata.*

Calyx wings not laterally extended.

Calyx wings projecting as teeth above the calyx margin. *T. stenoptera.*

Calyx wings not at all higher, or little, than the calyx margin.

Stems 4-angled; petals about 16 mm. long..... *T. temnoptera.*

Stems terete; petals about half as long..... *T. stephanotricha.*

Calyx terete, not at all winged.

Flowers sessile, capitate.

Vesicles at summit of petiole; calyx setulose..... *T. undabunda.*

Vesicles on leaf base; calyx glabrous..... *T. capitata.*

Flowers more or less pedicellate; inflorescence rarely congested.

Calyx obviously toothed, the outer teeth subulate, conspicuous.

Flowers small, the flowering calyx about 3 mm. long.

Calyx glabrous or lightly setulose; vesicles elongate. *T. parviflora.*

Calyx tomentulose and setulose; vesicles short. *T. micrantha.*

Flowers medium, the flowering calyx 4–8 mm. long.

Leaves setulose above; vesicles petiolar..... *T. aristata.*

Leaves smooth above or nearly; vesicles, if present, on the leaf base or extending into it.

Style pilose; outer calyx teeth longer than the lobes. *T. longisepala.*

Style glabrous; outer calyx teeth and lobes subequal. *T. egensis.*

Calyx truncate or more or less obscurely lobed, the outer teeth obsolete, reduced or barely equaling the lobes, sometimes with an elongate bristle.

Vesicles only lacking exceptionally, clearly borne on the petioles, rarely extending into the leaf base.

Flowers few, crowded in short cymes..... *T. juruensis.*

Flowers usually many, in open racemes or panicles.

Inflorescence densely glandular-setulose or pilose.

Vesicles ovoid; flowers paniculate..... *T. occidentalis.*

Vesicles elongate; flowers racemose..... *T. bullifera.*

Inflorescence eglandular or nearly, sometimes pubescent.

Flowers in a simple raceme; vesicles fusiform.

Calyx teeth without a solitary bristle... *T. bullifera.*

Calyx teeth terminating in a solitary bristle. *T. Ulei.*

Flowers more or less panicled, the panicle sometimes racemose but vesicles about as broad as long. *T. guianensis.*

Vesicles lacking or entirely in the leaf base.

Style glabrous unless slightly pilose near base.

Leaves minutely cordate-auriculate at base; vesicles none or the leaf base more or less inflated. *T. subnuda, T. subciliata.*

Leaves somewhat narrowed or vesicular at base.

Calyx tube infundibuliform, 4 mm. long... *T. caudata.*

Calyx tube ovoid-campanulate, soon 8 mm. long or longer..... *T. egensis.*

Style pilose or glandular.

Calyx and style eglandular..... *T. lasiostyla.*

Calyx and style glandular..... *T. glandulosa.*

Tococa aristata Benth. in Hook. Journ. Bot. 2: 305. 1840; 963.

Branches and leaves hispid; petioles elongate; leaves lanceolate or oblong-lanceolate, 5-plinerved, acuminate both ends; petiole vesicle below the leaf blade, longer than thick; flowers 6–7 mm. long, pedicellate, panicled; calyx tube glandular-hirsute, the lobes short, the nearly filiform outer teeth much longer, 1.5–3 mm. long; ovary 3-celled, glabrous; style about 1 cm. long. Vesicles densely hirsute.—*T. orcheophora* Naud., 962, Bolivian, has 5–7-nerved leaves, rounded at base; *T. macrophysca* Spruce, 966, upper Amazonian, is marked by the awl-like calyx teeth which equal the tube. The single Peruvian collection may actually have been found in Ecuador. Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 93.*

Peru(?): (*Pavón*). Brazil; British Guiana.

Tococa bullifera Mart. & Schrank ex DC. Prodr. 3: 165. 1828; 966.

Branches glandular-pilose or subglabrous; leaves mostly vesiculous, the vesicles fusiform, the blades nearly equal, pilose both sides; flowers rose color, 5–6 mm. long, the raceme usually many-flowered, the pedicel 6–10 mm. long; calyx 6 mm. long, typically glandular-pilose, the outer calyx teeth obsolete or tuberculiform; ovary 5-celled, setulose; style 8 mm. long, the stigma peltate.—The Peruvian plant has the calyx glabrous, var. *leiocalyx* Cogn. Bol. Mus. Goeldi 5: 255. 1909; an intermediate form is var. *glabrata* Cogn. l.c. with subglabrous branchlets and calyx setose only apically. The ovary is

3- rather than 5-celled as originally described, fide Suessenguth. F.M. Neg. 6332. Illustrated, Mart. Nov. Gen. & Sp. 3: *pl. 277.*

Loreto: In woods at Iquitos (*Ducke 7601*). Brazil.

Tococa capitata Trail, ex Cogn. Mart. Fl. Bras. 14, pt. 4: 615. 1888; 967.

Branches densely hirsute; leaves oblong-lanceolate, attenuate at base, 7–8 cm. broad, rather long-pilose above, shortly hirsutulous on the nerves and veins beneath; vesicles narrowly ovoid; calyx glabrous, the broadly campanulate tube 5 mm. long, the roundish lobes denticulate, 3 mm. long; petals 6–7 mm. long; ovary apically long-setose, the style 3 mm. long; fruit broadly ovoid, 10–12 mm. long.—The leaves all about the same size and all vesicular; the inflorescence 15–20-flowered. *T. Trailii* Cogn. l.c. 967 has leaves strongly unequal, somewhat rounded at base, and calyx tube 4 mm. long, often a little setulose above; *T. setifera* Pilger, Verh. Bot. Ver. Brandenb. 47: 177. 1905, has glabrous branchlets, leaves unequal, calyx tube 8 mm. long with some forked setae.

Loreto: Iquitos, *Killip & Smith 27434* (det. Gl.). Brazil.

Tococa caudata Markg. Notizbl. Bot. Gart. Berlin 9: 1146. 1927.

A shrub to 2 meters high, with glabrous angled branches; petioles 3–5 cm. long; leaves oblong, narrowed and rounded or with basal vesicle, abruptly caudate, 5-plinerved, glabrous except the ciliate margins; inflorescence nearly glabrous; flowers about 5 mm. long, paniculate; calyx tube 4 mm. long, the lobes 2 mm. long and broad, apically sparsely long-setose; style glabrous, 8 mm. long.—F.M. Neg. 17200.

Loreto: Mouth of the Apaga, *Tessmann 4815.*

Tococa egensis Naud. Ann. Sci. Nat. sér. 3, 16: 92. 1851; 970.

Woody at base, to 4 meters high; leaves unequal, the larger 6–10 cm. broad, ovate-oblong, acuminate, rather thin, 5-nerved or 5-plinerved, narrowed and vesicle-bearing at base and on the upper part of the short (1–2 cm. long) petioles, the smaller leaves somewhat rounded at base; panicle ample; calyx scurfy-puberulent and sparsely pilose, the tube about 1 cm. long, the lobes 2–3 mm. long, the subulate outer teeth little exceeding the inner; petals 8–10 mm. long; ovary 3-celled, scarcely pilose apically, the style 11–13 mm. long, glabrous or nearly; stigma peltate; fruit subglobose, 8–9 mm. thick.—Mexia noted the plant as a perennial herb with woody base, 4 meters high, rose-pink flowers, greenish-white fruit. *T. hirta*

O. Berg, 961, upper Amazonian, has glandular-ciliate leaves and a 2-celled ovary. F.M. Neg. 17202.

Loreto: Mouth of Río Tigre, *Killip & Smith 27535* (det. Gl.). Iquitos, *Williams 8036; 43; Mexia 6412* (all det. Gl.). Caballo-Cocha, *Williams 2463* (det. Gl.). Brazil.

Tococa glandulosa Gleason, Bull. Torrey Club 58: 252. 1931.

Shrub 2 meters high, the roundly 4-angled branches glabrous except for the setulose nodes; petioles only to 15 mm. long; leaves ovate-lanceolate, the larger with ovoid vesicle 2 cm. long at the base, this rounded, 5-nerved, glabrous above, minutely scurfy, especially on the nerves beneath; inflorescence ample, paniculate, setulose at the lower nodes, glandular at the upper; calyx densely glandular-hirsute and minutely stellate, 8 mm. long; sepals subrotund, the outer teeth broadly triangular, slightly shorter, thickened medially and prolonged into a subulate tooth 0.7 mm. long; petals lilac-rose, 10 mm. long; anthers basally prolonged into 2 rounded lobes; ovary 3-celled, apically glandular-setose; style 19 mm. long, glandular-pubescent, the stigma capitate.—Vegetatively similar to *T. lasiostyla*, but glandular. *T. cordata* O. Berg, 968, Amazonian, would be sought here because of the glandular pubescence but it has a very dense panicle, the flowers subtended by large bracts; *T. ciliata* Triana, 970, is also glandular but it has coriaceous leaves only 5–8 cm. long.

Loreto: Mishuyacu near Iquitos, *Klug 424*, type. Río Nanay, *Williams 618; 1092* (det. Gl.). "Yaco mullaca."

Tococa gonoptera Gleason, Bull. Torrey Club 58: 247. 1931.

Stems shrubby, the young strongly 4-angled and sulcate, densely hirsute, with stout simple or minute glandular hairs 5–7 mm. long; petioles below the vesicles, these semi-ellipsoid, 10–15 (rarely 30) mm. long; leaves elliptic, falcate-acuminate, crenulate and ciliate, acute at base, 3-nerved, thin, sparsely pilose above, glabrous beneath except for few setae on the principal veins; inflorescence small, rather crowded, subumbellate, terminal and in the upper axils; calyx turbinate, 8 mm. long, 5-winged, the wings marginally densely hirsute, the intermediate nerves sparsely glandular, otherwise glabrous, membranous, extending to tip of sepals and near summit abruptly widened into a laterally projecting, triangular, acute tooth nearly 3 mm. wide; sepals triangular, acute; petals 9–12 mm. long, 7 mm. wide, retuse; ovary 3-celled, with glandular setae about the base of the style, this glabrous, the stigma broadly peltate.—Suggests a 5-merous form of *T. quadrialata*.

Loreto: Dense forest, Yurimaguas, *Killip & Smith 28092*, type; *Killip & Smith 26288*. Balsapuerto, *Killip & Smith 28601; Klug 3027* (det. Gl., distr. as *T. juruensis*).

Tococa guianensis Aublet, Pl. Guian. 1: 438. *pl. 174*. 1775; 965. *T. discolor* Pilger, Verh. Bot. Ver. Brandenb. 47: 176. 1905, fide Gleason. *T. loretensis* Ule, Notizbl. Bot. Gart. Berlin 6: 365. 1915, fide Gleason.

Branches mostly setose only at nodes, otherwise often glabrous or at first somewhat setose and minutely scabrous-pilose; leaves 3–5-nerved or obscurely 3-plinerved, usually broadly rounded at base; panicle branches flat and slender; calyx glabrous or setose only above, the outer teeth scarcely longer than the minute lobes; petals rose or whitish, 7–8 mm. long; berry ovoid, 6–7 mm. long.—Gleason, Bull. Torrey Club 58: 250–251, has given a study of the variation in the shape and pubescence of the sepals and outer teeth and in the structure of the ovarian corona, showing that outer teeth may project beyond the sepals or not, bear 1 to several setae and the corona may be lacking or may be tubular with 10 lobes, glandular bristles, or distinct bristles even 5 mm. long. *T. Spruceana* Cogn., 964, upper Amazon, has setulose leaves and densely villous-hirsute calyces. F.M. Negs. 17201 (*discolor*); 17206 (*loretensis*).

Loreto: In swamp near Iquitos, *Ule 6234*, type, *T. loretensis; Williams 1382; Klug 415; Williams 1522; Williams 3657*. Río Nanay, *Williams 1301*. Pebas, *Williams 1711*.—Río Acre: *Krukoff 5585*. To Colombia and Guiana.

Tococa juruensis Pilger, Verh. Bot. Ver. Brandenb. 47: 176. 1905.

A shrub 1–2 meters high, the younger branches sulcate, long-setose; leaves nearly equal, elliptic, rounded or little narrowed at base, shortly and abruptly acuminate, to 30 cm. broad, shortly appressed-setose above, slightly so on the nerves beneath, 5-nerved; petioles with elliptic vesicles 3.5 cm. long; cymes small, few-flowered, the setose pedicel 5–6 mm. long; calyx tube campanulate, 7 mm. long, setose, the limb not at all lobed, the outer teeth obsolete; petals rose color, 13 mm. long; stamen connective very shortly calcarate; stigma subpeltate.—*T. carolensis* Gleason, Amer. Journ. Bot. 19: 746, 1932, Bolivian, has terete stems, smaller leaves. F.M. Neg. 17203.

Loreto: Pebas, *Williams 1617; 1685; 1940* (det. Gl.). Brazil. "Maraño."

Tococa lasiostyla Cogn. Mart. Fl. Bras. 14, pt. 4: 455. *pl. 97.* 1888; 971.

Nearly *T. egensis* except as noted in key and probably only a variety; leaves rounded or subcordate at base, often definitely scurfy-stellulate on the veins and nerves beneath; exterior calyx teeth subulate, a little longer than the broad lobes; ovary 3-celled, apically setulose, the style subfiliform.—According to Mexia, a spreading shrub 5 meters high with rose pink flowers. *T. Poortmanni* Cogn., 971, of Ecuador, is marked by its 3-nerved oblong leaves only 2.5–4 cm. wide. F.M. Neg. 17205.

Loreto: Overflowed bank of Río Marañón, above Rancho Indiana, *Mexia 6409* (det. Gl.); also elsewhere in Loreto, fide Gleason, *Killip & Smith 27426; Williams 3119; Klug 744.* Río Mazán, *Schunke 27*(?). Timbuchi, *Williams 732; 1152.* La Victoria, *Williams 3119.* Pebas, *Williams 1844.* Brazil. "Sacha mullaca," "yacu mullaca," "rifare con hormiga."

Tococa longisepala Mart. Fl. Bras. 14, pt. 4: 449. *pl. 96.* 1888; 968.

Leaves very unequal, oblong or oblong-lanceolate, the larger attenuate at base, 6–11 cm. broad, the smaller basally rounded and without vesicle; petioles 1–2 cm. long; vesicles (1) 2–3 cm. long; panicles narrow, subracemiform; calyx tube 7 mm. long, the outer subulate teeth 7–8 mm. long, much longer than the inner; petals rose, 1 cm. long; ovary 3-celled, densely short-pilose apically; style 15 mm. long or longer, the stigma peltate; fruit ovoid, 10–12 mm. long.—The calyx is lightly scurfy-puberulent or glabrate. *T. lancifolia Spruce,* 970, north Amazonian, has rigid, narrowly lanceolate, 3-nerved leaves.

Peru (probably, as found in adjacent territory). Brazil.

Tococa micrantha Ule, Notizbl. Bot. Gart. Berlin 6: 364. 1915.

Small shrub with densely hispid branches, leaves, and inflorescence; leaves oblong-elliptic, 5-nerved, 2–2.5 dm. long; panicle axillary and terminal; fruit subglobose, about 5 mm. thick, bluish according to Mexia.—As the author remarks, similar to *T. parviflora,* but the leaves all vesicular, with shorter roundish vesicles, the calyx tomentulose and setulose, the outer subulate teeth long-setose.

Junín: Puerto Bermúdez, *Killip & Smith 26482* (det. Gl.).—San Martín: Pongo de Cainarachi, *Ule 6369,* type.—Loreto: Mouth of Santiago, *Tessmann 4191* (det. Markgr.). Soledad, *Killip &*

Smith 29706; 29715 (det. Gl.). Pongo de Manseriche, shrub, 3 meters, in dense forest, *Mexia 6363* (det. Gl.).

Tococa occidentalis Naud. Ann. Sci. Nat. sér. 3. 16: 92. 1851; 964.

Branches setulose only at the nodes; vesicles and petioles, the former on the longer of these, hirsute; leaves abruptly acuminate, appressed-setulose above, hirsutulous beneath only on the 5 nerves; panicle and calyces densely glandular-pilose, the latter truncate, 7–8 mm. long, the exterior teeth confluent, the interior obsolete; ovary glabrous, 3-celled, minutely denticulate; style about 15 mm. long.—The type has an abrupt filiform acumination. F.M. Neg. 36325.

San Martín: Moyobamba, *Mathews 1306*, type; (*Fielding*); *Weberbauer 4494* (det. Cogn.); 290.

Tococa parviflora Spruce ex Triana, Trans. Linn. Soc. 28: 132. 1871; 963.

Branches densely hispid; leaves 5-nerved, obovate-oblong, abruptly acuminate, rather unequal, the larger sparsely setose above, hirsute on nerves beneath, ciliate, otherwise glabrous, entire to repand-dentate; panicles many-flowered, 1–1.5 dm. long; calyx tube oblong, glabrous, the outer teeth elongate, subulate, aristate.—The elongate vesicles are long-extended, often contiguous with blade, lacking on smaller leaves, these obtuse at base, 3-nerved.

San Martín: Tarapoto, *Spruce 4617*, type. Valley of the Monzón, Pongo de Cainarachi, 3-meter shrub, flowers white, *Klug 2652* (det. Gl.); *Weberbauer 3634* (det. Cogn.); 285.—Huánuco: Pueblo Nuevo, *Ruiz & Pavón* (det. Markgr.).—Loreto: Balsapuerto, *Killip & Smith 28511* (det. Gl.).

Tococa quadrialata (Naud.) Macbr., comb. nov. *Microphysca quadrialata* Naud. Ann. Sci. Nat. sér. 3. 16: 99. 1851; 974.

Hispid-setose shrub with the port of vesicular species of *Clidemia* but the calyces narrowly winged, the flowers all in small axillary cymes; leaves 3-nerved, the larger 5–9 cm. wide, the opposite smaller, about a third as large; vesicles on petioles at base of leaf; calyx 7 mm. long, the lobes broad, obtuse, with short outer tooth, the lobes provided with a vertical dorsal glabrate wing; flowers 4-merous; petals retuse, 11–13 mm. long; anthers obtuse, little curved; style 7–8 mm. long, filiform; fruit 6–7 mm. thick.—Leaves are glabrous beneath except for the nerves. A related shrub, *Microphysca*

rotundifolia Triana, Trans. Linn. Soc. 28: 141, Amazonian, has rounded 7–9-plinerved smaller leaves, only the larger vesicular, calyx only 4 mm. long, anthers acute. F.M. Neg. 17191.

Cuzco: *Gay*, type.—Puno: San Gabán, *Lechler 2352*.

Tococa stenoptera Gleason, Bull. Torrey Club 58: 248. 1931.

Younger branches flattened and winged, the wings marginally short-hirsute; formicarias small, shortly hirsute, semi-ellipsoid, 14–18 mm. long, leaving the petiole free for only about 5 mm.; leaves elliptic-acuminate, minutely dentate, cuneate at base, 5-nerved, setulose above, pubescent and on the veins glandular-puberulent beneath; panicle ample, the axis strongly wing-flattened, glandular and pubescent like the young branchlets; calyx wings thick and fleshy, 0.5 mm. wide, densely hirsute, projecting at least 1 mm. beyond the calyx as subulate teeth; sepals broadly depressed-rounded, the outer teeth truncate; petals pink, about 11 mm. long; ovary 3-celled, the corona with fimbriate margins; style glabrous, 18 mm. long, the stigma peltate.—*T. pauciflora* Spruce, 960, Río Negro, rather similar, has a few-flowered inflorescence, the branchlets very slender.

Junín: Puerto Yessup, a small tree 5–6 meters high in dense forest, *Killip & Smith 26280*, type.

Tococa stephanotricha Naud. Ann. Sci. Nat. sér. 3. 16: 95. 1851; 959.

Spreading shrub, 1 meter or so high, the branches slender; petioles 2–4 cm. long, leaves oblong-ovate, rather long-acuminate, rounded at base, membranous, 15–22 cm. long, 6–9 cm. wide, often much smaller; panicles few-flowered, 2–6 cm. long; flowers ebracteolate at base; calyx 8–10 mm. long, the wings long-glandular-setose, the limb shortly lobed; petals red, white-margined, 10–11 mm. long, the purple style 7–8 mm. long, the stigma peltate; ovary typically 5-celled, the berry 7–8 mm. thick.—Leaves typically with scattered weak yellow hairs above, glabrous beneath except the hirsutulous nerves, these slender. The branches are densely hispid in the variety *ferruginea* Cogn. Gleason, Bull. Torrey Club 58: 249, found the Killip & Smith specimens with 3-celled instead of 5-celled (as typical) ovaries, the corona erect instead of spreading and the calyx wings narrowed to an acute angle at summit instead of truncate; he accordingly referred these collections here with some doubt. *T. pauciflora* Spruce, 960, has the ovary 3-celled, the

leaves only 2–3 cm. broad, very long-acuminate. F.M. Neg. 36328. Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 90.*

Loreto: Mainas, *Poeppig*, type. Cerro de Escaler, *Ule 642* (the var., det. Pilger).—San Martín: Tarapoto, *Spruce 4526* (*4256?* det. Cogn.). Tocache, *Poeppig 1844.*—Junín: Pichis Trail, 1,100 meters, *Killip & Smith 25967; 26035* (det. Gl.).—Puno: San Gabán, *Lechler*. Without locality, type variety (*Fielding*). Brazil.

Tococa subciliata (DC.) Triana, Trans. Linn. Soc. 28: 133. 1871; 971. *Miconia subciliata* DC. Prodr. 3: 187. 1828.

Shrub or small tree with glabrous or nearly glabrous branches; petioles 2–3 cm. long; leaves firm, ovate-oblong, emarginate at base, acuminate, 5-nerved, equal in size, 4–8 cm. wide; panicle ample; calyx glabrate, distinctly 5-lobed, 7–8 mm. long; petals 8 mm. long; ovary 3-celled, scarcely glandular-pilose apically, the glabrous or nearly glabrous style about 15 mm. long, the stigma peltate.—An 8-meter tree with flowers bright rose (Klug). Apparently to this should be referred *T. subnuda*, which *Klug 3459* resembles in its nearly truncate calyx. Probably specific lines here should be broadened to include more variation as, for example, in *T. guianensis*.

San Martín: Near Moyobamba, *Klug 3454* (det. Gl.); *Klug 3459*. Brazil; British Guiana.

Tococa subnuda Benth. in Hook. Lond. Journ. Bot. 2: 303. 1840; 969.

Branches glabrous; leaves membranous, ovate-oblong, shortly acuminate, rounded or somewhat cordate at base, 5-nerved, the larger usually somewhat inflated at the base, 7–11 cm. wide; panicle often few-flowered; calyx glabrate or scurfy-puberulent, truncate or obscurely lobed, the external teeth minute, acute, 8–9 mm. long; petals rose color, 9–10 mm. long; ovary 3-celled, apically glandular-puberulent, without corona, the style nearly or quite glabrous, 2 cm. long, the stigma subpeltate.—Probably to be included in *T. subciliata*. *T. planifolia* Benth., 972, Amazonian, has smaller, firmer, rigid-ciliate leaves, the outer calyx teeth minute; *T. cinnamomea* Triana, 972, similar, has rigid glabrous leaves, calyx, the glabrous ovary 10-denticulate; *T. coronata* Benth., 969, seems to be a form of *T. subnuda* with the style a little pubescent, corona more or less developed, ciliate. F.M. Neg. 17212.

Loreto: Mouth of Marañón, San Isidro, *Tessmann 4963*. Masisea, *Tessmann 3374*. Brazil; British Guiana.

Tococa temnoptera Gleason, Bull. Torrey Club 58: 249. 1931.

Similar to *T. stephanotricha* but the stems even in age roundly 4-angled and shallowly sulcate, when young somewhat glandular; vesicles slender, 3 cm. long; leaves elliptic, nearly 2 dm. long and 12 cm. wide, broadly acute or acuminate at base, sharply acuminate; calyx wings truncate or triangular and somewhat projecting; petals pale pink to white, 16 mm. long, 8.5 mm. wide; ovary surmounted by a spreading fimbriate-ciliate corona 4 mm. broad.

Junín: Puerto Yessup in dense forest, *Killip & Smith 26237*, type.

Tococa Ulei Pilger, Verh. Bot. Ver. Brandenb. 47: 177. 1905.

A small shrub with compressed, remotely if at all setulose branches, the youngest with the inflorescence densely and minutely papillose; petioles to 5 cm. long, the vesicle borne below the leaf blade, this to 3 dm. long and 1 dm. wide, 5-nerved, narrowed to base, acutely caudate, scattered-setulose above; inflorescence lax, nearly or quite simply racemose; flowers rose color on pedicels to 7 mm. long; calyx tube 5 mm. long, minutely 5-denticulate, the teeth terminating in black setae 2–5 mm. long; style 8 mm. long, glabrous. —A fruiting specimen from Brazil, forma *parvivesicosa* Pilger, has inflorescence to 12 cm. long, the fruit 5–6 mm. long. Apparently similar to *T. bullifera* Mart. & Schrank var. *glabrata* Cogn. or probably too near the racemose forms of *T. guianensis*. F.M. Neg. 17214.

Loreto: Leticia, *Ule 6200*, type. Sarayacu to Santa Catalina (*Huber 1510*). *Williams 2050; 2101* (det. Gl.). "Caballo-Cocha."

Tococa undabunda Macbr. Field Mus. Bot. 4: 177. 1929.

Branches subterete, the flexuous younger ones with the petioles more or less setulose; leaves rounded at base or somewhat acute, subabruptly acuminate or caudate, the obscurely undulate margin densely ciliate, 5-nerved, sparsely setulose above, glabrous beneath except for the hirsutulous nerves, the larger 1–1.5 dm. wide, their petioles vesicular above, the vesicle ovoid; flowers sessile, ebracteolate, 30–40 in shortly peduncled terminal heads; calyx papillose below, sparsely setulose above, the oblong-campanulate tube about 5 mm. long, distinctly 5-lobed, the broadly ovate lobes long-setulose. —Apparently nearest *T. spadiciflora* Triana, 967, Colombian, with serrulate leaves, the petiole inflated its entire length, the flowers bracteate.

Junín: Hacienda Schunke, La Merced, open shrub about 1.5 meters high, *5734*, type.

38. MAIETA Aublet

Shrubs or small trees similar to *Clidemia* and *Tococa* but the anther cells promptly and obviously convoluting; from the former with few exceptions it is further distinguished by the anthers being bifurcate at base and from the latter by the entirely axillary flowers. Flowers or inflorescence with ovate or lanceolate bracts. Larger leaves vesicular toward the base. Style stout.

This is the limitation of the genus according to Gleason, Bull. Torrey Club 58: 77–79. 1931, which restriction permits a much more satisfactory definition of the groups *Clidemia* and *Tococa* that naturally, except for convenience, would be included here as sections.

Maieta guianensis Aublet, Pl. Guian. 1: 443. *pl. 176*. 1775; 975. *Myrmidone peruviana* Cogn. Bot. Jahrb. 42: 147. 1908, fide Gleason.

Hirsute-pilose shrub with very unequally developed leaves, the larger 5-plinerved, oblong-obovate, to 2 dm. long and about half as wide, long-acuminate, rounded at base below the vesicle, the smaller oblong 3-several cm. long; flowers 5-merous, sessile, solitary or ternate with broadly ovate setose bracts; calyx about 6 mm. long, the white petals as long, the broad ovate sepals obtuse, to 1.5 mm. long.—Usually about 1 meter high. The var. *peruviana* (Cogn.) Ule, Notizbl. Bot. Gart. Berlin 6: 368. 1915, has typically somewhat narrower leaves, the pubescence somewhat more glandular, a form or race.

Huánuco: Chicoplaya, *Pavón*. Prov. Huamalies, *Weberbauer 3662* (type, var.).—San Martín: near Tarapoto, *Spruce*.—Junín: Cahuapanas (*Killip & Smith 26779*). Puerto Bermúdez (*Killip & Smith 26544; 26551*). Pichis Trail (*Killip & Smith 26151*).—Loreto: Cerro de Escaler, *Ule 20p* (det. Pilger). Mouth of Santiago, *Tessmann 4561* (det. Markgr.). Balsapuerto (*Killip & Smith 28407*). Pebas, *Williams 1623* and many other collections from Loreto.—Puno: Scandent on trees at San Gabán (*Lechler 2499*, fide Cogniaux, perhaps doubtful). Bolivia to Colombia and the Guianas. "Puca quiro mullaca."

Maieta Poeppigii Mart. ex Triana, Trans. Linn. Soc. 28: 141. 1871; 976.

Similar to the preceding but leaves often more abruptly acuminate, the smaller rounded; flowers about 3, in shortly peduncled cymes, the bracts stellate-pubescent; petioles tomentose dorsally. F.M. Neg. 17194.

Huánuco: Pueblo Nuevo, *Tafalla* (det. Markgr.).—Junín: Puerto Bermúdez, *Killip & Smith 26432* (det. Gl.).—Loreto: Pebas, *Williams 1571*. Manfinfa, *Williams 1169*. La Victoria, *Williams 2545*. Santa Ana, *Williams 1239* (all det. Gl.). Tierra Doble on the Río Nanay, *Williams 1058* (as to Field Museum spec.; cf. *Clidemia foliosa*). Brazil to Guianas and Costa Rica. "Millua-mullaca," "puca-curu," "puca quiro."

39. CLIDEMIA D. Don

Shrubs, usually erect, or less frequently trailing or climbing and then sometimes rooting between the nodes. Branchlets and leaves usually densely pubescent, the latter 3–9-nerved or plinerved. Flowers either 4- or 5–7-merous, small (except in *C. hirta* with petals to 10 mm. long), borne in axillary fascicles, panicles or spikes, or the inflorescence sometimes also terminal. Petals oblong to obovate, blunt or even retuse. Calyx rarely glabrous, never winged, the limb obscurely if at all lobed, or its lobes with outer teeth, these often longer. Stamens alike (if bifurcate basally the leaves never vesicular), the connective usually normal. Anther cells straight or tardily curved. Ovary free or partly inferior, 3–7-celled, sometimes with an apical corona.

One species is provided with stipular vesicles or formicaria on the stem at base of petioles and several have more or less inflated petioles or the petioles are vesicular just below the leaf or this itself at the base; these species simulate *Tococa* with however the anthers more or less incurved apically and *Maieta* with the anthers bifurcate basally, the cells convolute, and the flowers bracteate. Gleason, Bull. Torrey Club 58: 73–85. 1931 has given a new alignment of this last genus and the present as regards the myrmecophilous species, so-called, upon which I have drawn with thanks. The vesicles lack sometimes on specimens of species in which they are ordinarily present so of course the "character" is of only secondary taxonomic interest, but none the less intriguing; cf. the study (accompanied by a bibliography) by Douglas Melin (cited by Gleason), Zool. Bidr. Uppsala 13: 87–104. 1930. Cf. also *Tococa*.

Clidemia remains, it may be remarked, a concept rather arbitrarily retained but conveniently so on account of *Maieta* (in which Baillon, Hist. Pl. 7: 56. 1880 rightly merged it) being the older name; from *Ossaea* and *Leandra* its blunt petals define it; exceptional specimens with terminal inflorescences simulate *Miconia* with much larger freely branched panicles (Gleason), but unfortunately this is not always the case. At least one species imitates *Henriettea* in

that it bears its flowers on the older wood below the existing leaves, leaving only the anthers as a means of distinguishing the groups. The following key and synopsis have in many instances been based on the discriminating papers of Gleason, particularly "The Genus Clidemia in Mexico and Central America," Brittonia 3: 97–140. 1939; the author there, 97–100, gives an especially clear exposition of the characters and their relative importance in defining the species.

Williams, Field Mus. Bot. 15: 541. 1936, has listed *Clidemia bullosa* (Spreng.) Cogn. with the native name "Cascabel," but no specimen from Peru has been located; since the species apparently is eastern Brazilian, its occurrence in Peru is doubtful; probably *C. umbonata* was meant.

Leaves strongly dimorphic, the smaller of each pair like large stipules and often different in shape; shrubs sometimes flowering when still young and semi-herbaceous but erect.

Leaves subsessile, not vesicular; pubescence scurfy.....*C. dimorphica.*

Leaves basally, or the short petioles, vesicular; pubescence hispid.

Leaves 5–7-plinerved, the elongate petiolar vesicle extending into leaf base.....*C. foliosa.*

Leaves 3–5-nerved, the ovoid vesicles completely on petioles.

Flowers 5-merous; cymes sometimes small but relatively diffuse.....*C. heterophylla.*

Flowers 4-merous; cymes short, crowded.....*C. Sprucei.*

Leaves if at all dimorphic merely somewhat unequal in size or if very unequal the plants repent or scandent.

Stems with vesicles at base of petioles or the petioles lacking or nearly lacking, rarely 5 mm. long, or vesicular.

Leaves long-petioled.....*C. tococoidea.*

Leaves sessile or subsessile, the vesicles if present on entire petiole or on stem, then concealed by leaf base.

Leaves shortly petioled, the petiole vesicle inflated.
C. juruensis.

Leaves cordate-clasping or at least subsessile, the short petioles not vesicular.

Pubescence conspicuously hirsute or villous, sometimes subappressed, often also stellate-puberulent.

Flowers sessile or subsessile.....*C. rubra.*

Flowers cymose-paniculate, sometimes few and crowded, rarely solitary but pedicellate.

Leaves broadly cordate-ovate.....*C. pilosa.*

Leaves ovate-lanceolate, emarginate at base...*C. Ulei.*

Pubescence of the branchlets predominately scurfy-stellate. *C. ciliata.*

Stems as well as leaves and petioles without vesicles, the petioles, at least most of them, well developed (cf. *C. Ulei*).

Shrubs, small trees or rigid-stemmed herbs with very pubescent leaves or the leaves not broadly cordate (plants sometimes flowering when semiherbaceous but erect).

Pubescence, at least that on stems, a scurfy puberulence; flowers 4-merous.

Leaves definitely, sometimes shortly, plinerved; petioles scurfy-puberulent.

Leaves strikingly 5–7-plinerved.....*C. septuplinervia.*

Leaves shortly (5–20 mm. above leaf base) plinerved. *C. sessiliflora.*

Leaves basally 5 (–7) -nerved; petioles shortly pilose. *C. obliqua.*

Pubescence, at least in part on stems, not merely scurfy-puberulent; flowers 5–7-merous or axillary and sessile.

Flowers closely sessile in the leaf axils, 4-merous...*C. rubra.*

Flowers not so borne, 5–7-merous.

Leaf pubescence simple or in *C. purpurea* leaves glabrous beneath except for a slight puberulence.

Leaves more or less pilose or hispid beneath, rarely glabrate.

Leaves basally nerved.

Leaves emarginate or cordate.

Stems long-hispid, pubescent.....*C. hirta.*

Stems shortly hispid.....*C. graciliflora.*

Leaves acute at base.....*C. simulans.*

Leaves plinerved but sometimes only 1 nerve originating above the acutish base.

Pubescence eglandular.

Leaves in each pair subequal; ovary free. *C. dentata.*

Leaves obviously unequal; ovary nearly inferior.....*C. brachystephana.*

Pubescence, at least in part, glandular.*C. naevula.*

Leaves scarcely puberulent beneath.....*C. purpurea.*

Leaf pubescence in part stellate, sometimes obscurely.

Inflorescence rather diffuse or about as broad as long, the central axis not spicately extended.

Calyx lobes longer than broad but well exceeded by the conspicuous teeth.....*C. strigillosa.*

Calyx lobes broad but the teeth little surpassing them.....*C. umbonata.*

Inflorescence spiciform, the central axis extended, simple or somewhat branched below.*C. capitellata.*

Scandent shrubs often rooting between some of the nodes or stems in some species erect from a decumbent base, the leaves then broadly cordate and smooth or nearly; leaves in each pair of the scandent species very unequal in size but the character often obscure in herbaria; flowers 4-merous except in *E. Epibaterium.*

Petioles or branchlets densely or long-hirsute or red-strigose, or more or less setulose.

Leaves ovate or broader.

Flowers 5–6-merous; petioles 1–2 cm. long.
C. Epibaterium.

Flowers 4-merous; petioles elongate.

Calyces well pedicelled, densely hirsute, eglandular.
C. radicans.

Calyces subsessile, glandular-setulose.....*C. petiolata.*

Leaves oblong-lanceolate, elongate.....*C. longifolia.*

Petioles and branchlets or stems glabrate or merely scurfy-pubescent, sometimes short-hirsutulous near leaf base.

Panicles small, 2–few-flowered or densely congested.

Leaves unequally or doubly dentate; flowering stems scandent, rooting at nodes or between them.

Calyces, as leaves basally and petiole near leaf, hirtellous or setulose.....*C. epiphytica.*

Calyces and leaves glabrous or scurfy.....*C. serpens.*

Leaves entire or minutely crenulate; flowering stems weak, flexuous (herb. examples).

Cymes lax.

Cymes nearly glabrous; calyx lobes narrow.
C. cordata.

Cymes more or less scurfy-puberulent; calyx lobes ovate.....*C. crotonifolia.*

Cymes glomerate.....*C. urticoides.*

Panicles freely branched to 1 dm. long, sometimes even longer.....*C. procumbens.*

Clidemia brachystephana (Naud.) Triana, Trans. Linn. Soc. 28: 135. 1871; 990. *Staphidium brachystephanum* Naud. Ann. Sci. Nat. sér. 3. 17; 309. 1852.

Rather similar to *C. dentata* but the leaves more distinctly, even though shortly, 5-plinerved, unequal at base, thin, oblong-ovate-acuminate, 4 cm. wide, 10–12 cm. long, sparsely hispidulous both sides as the slender stem; longer petioles 10 mm. long; cymes about 1 cm. long, few-flowered, the densely setulose calyces pedicellate; calyx tube 4 mm. long, the filiform outer teeth nearly as long; petals nearly 10 mm. long; ovary entirely free.—F.M. Neg. 36343.

Huánuco: Pampayacu, *Kanehira 38.* Ecuador; Colombia.

Clidemia capitellata (Bonpl.) D. Don, Mem. Wern. Soc. 4: 310. 1823; 998. *Melastoma capitellata* Bonpl. Melast. 5. *pl. 3.* 1816. *C. neglecta* D. Don, l.c. 307 at least as to Peru. *C. dependens* [Pav.] D. Don, l.c. *Melastoma dependens* Pav. ex D. Don, l.c. *M. spicata* Aubl. Pl. Guian. 1: 423. *pl. 165.* 1775. *C. spicata* (Aubl.) DC. Prodr. 3: 159, 1828, not Don, l.c. 308. *Maieta dependens* Baill. Hist. Pl. 7: 35. 1880.

Much branched shrub 2–3 meters high, the younger branchlets, petioles and peduncles shortly stellate-tomentose and more or less setulose; petioles 1–2 cm. long; leaves subequal, ovate, rounded at base, moderately acuminate, scarcely serrulate, 5–7-nerved, rather densely short-hirsute above, densely more or less stellate-lanate and crisply hirsutulous as well as slightly setulose beneath, usually 5–7 (9) cm. broad, 1–1.5 dm. long; panicle spike-like, the flowers clustered in remote verticils; calyx stellate-tomentulose and setulose, eglandular to glandular, the tube about 3 mm. long, the inner finally spreading teeth 1.5 mm. long and broad, the outer teeth linear-subulate, shorter or scarcely longer; petals retuse, 4 mm. long, several-nerved; ovary half free.—The Poeppig specimens may have been mixed because in Herb. Vienna Cogniaux determined them as *C. dependens.* But actually, as has been suggested by Gleason, Carnegie Inst. Wash. Publ. 522: 345. 1940, there appears to be only one somewhat variable species concerned; *C. neglecta* is distinguished by Gleason chiefly by the presence, at least in large part, of only

stellate trichomes on the leaves beneath; however, as to material purporting to be *C. neglecta* from the Madrid herbarium the character does not apply. In any case it seems doubtful if the Pavón type is from Peru or that the merely stellate-pubescent form occurs there—the name, at least as regards Peru, may therefore be dropped. As for *C. dependens* this may become var. **dependens** ([Pav.] D. Don) Macbr. comb. nov., cf. synonomy above. This variety is the form with the flower clusters borne more or less approximately, often longer hirsute; to it belong part of the Peruvian collections. There seems to be no co-ordination between the density of the clusters and the glandulosity as suggested by Gleason; indeed, *C. capitellata* as to type (Colombian) is not markedly glandular. F.M. Negs. 17232 (*neglecta*); 17240 (*dependens*).

San Martín: Tocache; *Poeppig 1865; 1936.* Tarapoto, *Williams 6153; 7308* (var. *dependens*).—Junín: La Merced, *5492.*—Huánuco: *Kanehira 57* (var. *dependens*).—Loreto: Yurimaguas, *Poeppig 2362B* (*capitellata*). Near Iquitos, *Klug 1244; Killip & Smith 27205; Williams 334; 1461.* General in Tropical America. "Milluamullaca."

Clidemia ciliata [Pavón] D. Don, Mem. Wern. Soc. 4: 309. 1823; 1020. *Melastoma ciliata Pavón* ex D. Don, l.c., in syn.

Branches scurfy-stellate and hispid; leaves sessile or subsessile, distinctly cordate, shortly and sparsely setulose above, rather rusty, furfuraceous and densely reticulate-foveolate beneath, the larger obscurely 7-nerved, 6 cm. long, 5 cm. broad; flowers 4-merous, in cymes about 1 cm. long; calyces stellate, the oblong tube 5–6 mm. long, the slender spreading outer teeth ciliate, 1.5–2 mm. long; petals white, obovate, about 3 mm. long; fruit ovoid, 6 mm. long.—Nearly *C. pilosa*, but the leaves more pubescent, smaller. F.M. Neg. 17220.

Huánuco: Chicoplaya, *Pavón.*—Ayacucho: Aina, (*Killip & Smith* 22704, det. Gl.). Bolivia; Venezuela; Colombia.

Clidemia cordata Cogn. Bull. Torrey Club 17: 211. 1890; 1015.

Nearly glabrous, the long terete younger branches scarcely scurfy-puberulent; petioles 6–10 cm. long; leaves broadly ovate-cordate, shortly acuminate, minutely crenulate-denticulate, lightly furfuraceous on the nerves beneath, 11–16 cm. long, 9–13 cm. broad; cymes diffuse, 3–5 cm. long; flowers 4-merous on pedicels 1–3 mm. long, very minutely bibracteolate apically; calyx tube ovoid, 2 mm. long, the outer reflexing teeth oblong-linear, nearly as long. The Peruvian

collections that have been referred here seem rather to be *C. urticoides;* the species however may be the earlier name for the next.

Junín: Puerto Yessup, *Killip & Smith 26340* (det. Gl.).—Loreto: La Victoria, *Williams 2709* (det. Gl.). Bolivia.

Clidemia crotonifolia Pilger, Verh. Bot. Ver. Brandenb. 47: 179. 1905.

Apparently similar to *C. cordata;* leaves rather densely ashy-furfuraceous on the nerves and veins beneath, as also the long petioles; calyx tube urceolate, 8-costate, the 4 broadly ovate lobes not as long; petals about 2 mm. long.—Described as a shrub 1–3 meters high, but apparently subherbaceous above and weak or subascending. F.M. Neg. 17222.

Loreto: Cerro de Ponasa, 1,300 meters, *Ule 6868.*

Clidemia dentata [Pavón] D. Don, Mem. Wern. Soc. 4: 308. 1823; 988. *Melastoma dentata* Pavón ex D. Don, l.c., in syn.

A shrub, densely hirsute except the oblong-lanceolate or ovate-oblong leaves, these sparsely pilose both sides, scarcely or not at all rounded or emarginate at base, sharply acuminate, minutely denticulate, 3–7 cm. wide by twice as long, shortly 5-plinerved; flowers 5–6-merous, crowded in clusters, the pedicels 5–10 mm. long or longer; calyx tube 4 mm. long, with 10 scales at throat, lightly stellate as well as hirsute, the outer calyx teeth 4 mm. long or shorter, the inner scarcely obvious; anthers not spurred at base; fruit ovoid.—Usually striking because of the often purple-red or red-brown pubescence on the inflorescence and younger parts; the petals are obscurely several-nerved, 6 mm. long, roseate or purple. Forms with nearly 5-plinerved leaves may be confused with *C. neglecta* but are distinguished by the lack of stellate hairs; forms of *C. hirta* with long leaves may also resemble it but the leaves are not plinerved and are rarely conspicuously toothed (Gleason). F.M. Negs. 17223; 38252 (Dombey spec. in Herb. Juss., *C. purpureum* DC., not Don).

Ayacucho: *Killip & Smith 22921; 23082* (det. Gl.).—Junín: *Killip & Smith 26269; 26403; 26440.*—Huánuco: Pozuzo, *4546.* Cuchero, *Pavón; Poeppig 105; 1048.* Pueblo Nuevo, *Pavón.*—San Martín: Tocache, *Poeppig.* Mt. Campana near Tarapoto, *Spruce 4838.* Moyobamba (*Mathews 1303*).—Loreto: Cerro de Canchahuaya (*Huber 1450*). Río Nanay, *Williams 750; 1275* (det. Gl.); also *1293; 774; 793; 795.* Pebas, *Williams 1596; 1694; 2040* (det. Gl.). North to Mexico and Trinidad. "Runta mullaca," "puca mullaca," "pasha mullaca."

Clidemia dimorphica Macbr. Candollea 8: 23. 1940; 1003. *C. dispar* [O. Berg] Cogn. in Mart. Fl. Bras. 14, pt. 4: 497. 1888, not Gardner in Hook. Lond. Journ. Bot. 2: 345. 1843. *Staphidium dispar* O. Berg ex Triana, Trans. Linn. Soc. 28: 141. 1871.

Branches elongate, little branched; leaves essentially sessile, the larger oblong and 5-nerved or shortly 5-plinerved, the smaller narrowly ovate and 3-nerved, stellate-scurfy on the nerves beneath, in age glabrous above, undulate-dentate; flowers 5-merous in short few-flowered panicles; outer calyx teeth minute, confluent with the inner, these broadly triangular.—Leaves typically 7–10 cm. long, half as wide. The Killip & Smith material, in fruit, has larger leaves, coarsely dentate, the teeth as much as 3 mm. remote, nearly 3 mm. long, blunt. F.M. Neg. 17724.

San Martín: Tarapoto, *Spruce 4428*, type.—Loreto: Leticia, *Ule 6203* (det. Pilger). Balsapuerto, *Killip & Smith 28443; 28591* (det. Gl. with query).

Clidemia Epibaterium [Mart.] DC. Prodr. 3: 157. 1828; 991. *Melastoma Epibaterium* Mart. ex DC., l.c., in syn.

Stems rooting and climbing in trees; petioles 1–2 cm. long; leaves somewhat hirsutulous and purplish beneath, ovate-oblong, acuminate, often rounded at base, crenulate-denticulate, 9–12 cm. long, about half as broad; cymes few-flowered, scarcely 1 cm. long; calyx tube 2.5 mm. long, the limb not dilated, the inner lobes nearly obsolete, the outer 1.5–2 mm. long; petals obtuse; fruit subglobose, sparsely hirsute, 3 mm. thick.—Gleason remarks for *Killip & Smith 29885*, "very pubescent plant, but with petioles average length," the other collections are smoother and the leaves almost sessile. F.M. Neg. 6437.

Loreto: Near Iquitos, *Killip & Smith 29885;* on Río Itaya, *Killip & Smith 29516; 29623*. Brazil.

Clidemia epiphytica Cogn. Melast. 1025. 1891.

Subscandent epiphytic shrub, the stems root-bearing, the younger as the petioles scurfy-puberulent and somewhat setulose; leaves glabrate, ovate-cordate, coarsely double-dentate on slender petioles mostly greatly elongate; cymes 1–2 cm. long, few-flowered, the capillary pedicels 5–10 mm. long; calyx tube urceolate, 2 mm. long, the 4 spreading or reflexed teeth long-ciliate, 3 mm. long.—F.M. Neg. 36345.

Huánuco: Valley of the Monzón, 700 meters, *Weberbauer 3688* (det. Cogn.); 286.—Loreto: Mouth of Santiago, *Tessmann 4231* (det. Markgr.). Colombia; Guatemala.

Clidemia foliosa Gleason, Bull. Torrey Club 58: 84. 1931.

Slender branchlets minutely stellate and long-glandular-hispid; petioles about 1 cm. long; vesicles 3–4 cm. long only extending on the petioles 5–10 mm. and provided with 2–6 oblongish leaf-like appendages 2–6 mm. long; leaves abruptly acuminate, finely crenulate, 5–7-plinerved, sparsely setose both sides, the smaller leaves ovate, 1–2 cm. long; inflorescence small, glandular-hirsute; flowers 5-merous, sessile; calyx tubular, minutely stellate, the outer calyx teeth as long, linear-subulate.

Loreto: Timbuchi on Río Nanay, *Williams 933*, type. Tierra Doble, *Williams 1058* (acc. to Gleason, but this collection in Field Museum is *Maieta Poeppigii*).

Clidemia graciliflora Huber, Bol. Mus. Goeldi 4: 596. 1906.

Erect-branched shrub; stems, petioles and nerves of the larger 9-nerved leaves densely rusty-hispid, some of the retrorse or spreading trichomes glandular; petioles 1.5–5 cm. long; leaves subequal, cordate-ovate, 5–11 cm. long, half as wide, long- and acutely acuminate, minutely crenate dentate, ciliate and setulose above, hispidulous on the nerves and veins beneath; panicle slender, 5–10 cm. long, sparsely setulose, the lower capillary branches with few-flowered cymes, the upper to 1 cm. long, one-flowered; bracts and bractlets minute; calyx urceolate, glabrate, 3 mm. long, the inner lobes as also the outer, much shorter than the tube, reflexing; petals white; fruit globose, slightly glandular-pilose.—Related, according to Huber, to *C. cordata;* rather, apparently, to *C. naevula;* also, from photograph, it is possibly an *Ossaea*.

Loreto: Cerro de Canchahuaya, *Huber 1476*.

Clidemia heterophylla (Desr.) Gleason, Bull. Torrey Club 58: 85. 1931; 977. *Melastoma heterophylla* Desr. in Lam. Encycl. 4: 34. 1797. *Tococa heterophylla* Don, Mem. Wern. Soc. 4: 305. 1823. *Maieta heterophylla* DC. Prodr. 3: 166. 1828.

Slender branched shrub, the younger parts and foliage sparsely long-hirsute; leaves very unequal, the larger 1.5–2 dm. long, the smaller only about 2 cm. long; inflorescence to 7 cm. long; flowers 5-merous, on pedicels 3–4 mm. long in few-flowered cymes with a primary peduncle usually 2–3 cm. long; calyx 5–6 mm. long, the

teeth often glandular, minute, setaceous; ovary nearly inferior.—The vesicles are borne entirely on the short petioles of the cordate-based leaves. I saw no glands on the Ruiz & Pavón material. *Weberbauer 3665* was referred by Cogniaux to *C. Sprucei*. F.M. Neg. 29496.

Huánuco: Chicoplaya, *Ruiz & Pavón*. Between Monzón and Huallaga, *Weberbauer 3632; 3665; 3681* (det. Gl.).—Junín: Cahuapanas, *Killip & Smith 26774* (det. Gl.).—San Martín: Tocache, *Poeppig 2051*.—Loreto: Balsapuerto, *Killip & Smith 28575; 28482* (det. Gl.). Without locality: *Jussieu*.

Clidemia hirta (L.) D. Don, Mem. Wern. Soc. 4: 309. 1823; 986. *Melastoma hirta* L. Sp. Pl. 390. 1753.

Shrub, or subherbaceous above, long hirsute throughout, the ovate leaves rounded or cordate at base, 5–7-nerved, entire to serrate; flowers 5–7-merous, the petals white to roseate, 7–10 mm. long; stellate hairs often lacking on the calyx tube, the outer teeth projecting 3 mm. or further; anther connective minutely spurred; ovary nearly free, shortly cylindrical at tip.—The variety *elegans* (Aublet) Griseb. has obviously cordate more coarsely crenate leaves; the var. **tiliaefolia** (DC.) Macbr., comb. nov.—*C. tiliaefolia* [Schrank & Mart.] DC. Prodr. 3: 158. 1828, is the more or less glandular form, the ovary free. Common in eastern Peru below 1,500 meters; only a few of the many collections made are cited.

Huánuco: Cuchero, *Poeppig 1048*.—San Martín: Tocache, *Poeppig 1838*. Tarapoto, *Williams 6332* (var. *tiliaefolia*); *6337; 7514* (det. Gl.).—Junín: La Merced, *5449; 5491*. Along Río Perené, *Killip & Smith 25192*.—Loreto: Florida, *Klug 2229* (var. *elegans*). Río Itaya, *Williams 77* (var. *tiliaefolia*); *Killip & Smith 29505*. Iquitos, *Mexia 6395; Williams 1480; Klug 6*. Río Nanay, *Williams 269*. Yurimaguas, *Williams 7854*. Balsapuerto, *Klug 2874*. Pró, *Williams 1972*. La Victoria, *Williams 2776*.—Río Acre: *Ule 99b*. Widely distributed. South America; West Indies; Mexico. "Tesiguiño-ey" (Huitoto), "mullava," "yana-mullaca," "pajar mullaca."

Clidemia juruensis (Pilger) Gleason, Bull. Torrey Club 58: 84. 1931. *Maieta juruensis* Pilger, Verh. Bot. Ver. Brandenb. 47: 178. 1905.

Branchlets long, densely spreading-setose; leaves subequal, long-attenuate to the base, shortly acute, 5-nerved, the short petiole vesicular its entire length, 10–12 mm. long; flowers in small axillary setose cymes; calyx tube cylindrical, the rigid setae in part glandular, 5 mm. long, the 5 acute lobes nearly 2 mm. long; petals white, 5 mm. long;

stamens 10, the anthers long-acuminate, the connective simple; style 7 mm. long; ovary free above, apically setose.—Approaches *Tococa*. F.M. Neg. 17193.

Loreto: Between Sarayaco and Santa Catalina (*Huber 1511*). Santa Rosa, *Killip & Smith 28754* (det. Gl.).

Clidemia longifolia Gleason, Bull. Torrey Club 58: 254. 1931.

Stems climbing, slender, terete, glabrous; petioles stout, 2.5–5 cm. long, densely spreading-hirsute; leaves oblong-lanceolate, subrotund at base, acuminate, to 4.5 dm. long, 11 cm. wide, irregularly and shallowly toothed, glabrous above, pilose on the midnerves and minutely scurfy on the veins beneath, thin, 5-nerved; inflorescence a small axillary panicle 3 cm. long, the slender branchlets scurfy-pubescent; pedicels 2–4 mm. long; flowers 4-merous; calyx densely hirsute, subglobose, about 3.5 mm. long; sepals glabrous, triangular, 0.7 mm. long, the foliaceous oblong-acuminate outer teeth as long as the calyx tube; ovary inferior, 4-celled.

Loreto: Mishuyacu, near Iquitos, (*Klug 62*, type); (*Klug 554*); (*Killip & Smith 29948*).

Clidemia naevula (Naud.) Triana, Trans. Linn. Soc. 28: 137. 1871; 993. *Staphidium naevulum* Naud. Ann. Sci. Nat. sér. 3, 17: 323. 1852.

Tall shrub or small tree, the younger branches, petioles and inflorescence, this cymose-paniculate, several cm. long or longer, shortly glandular-pilose; leaves membranous, the larger 3–6 cm. broad, 5–7-plinerved, unequal at base, sparsely glandular-pilose above, punctate-scurfy both sides, finely denticulate-ciliate, the petioles usually 1–2 cm. long; calyx tube 3 mm. long, the inner teeth obsolete, the outer shorter than 1 mm.; petals white, 2–3 mm. long.—*Williams 1701* was referred at one time by Gleason to *C. japurensis* [Schrank & Mart.] DC., 993, a species very similar but with longer mostly eglandular pubescence; probably the later-named form (*C. naevula*) should be treated as a more glandular variety.—Fruit grayish blue (K. & S.). Determinations by Gleason. Panicle sometimes reduced. Common in Loreto about Iquitos and elsewhere. F.M. Negs. 36347; 25879.

Loreto: Pebas, *Williams 1701*. Caballo-Cocha, *Williams 2039; 2184; 2123; 2121*. Río Nanay, *Williams 1178; 1035; 962; 796; 1246; 792*. Iquitos, *Williams 576; Killip & Smith 26927*. Mishuyacu, *Klug 2540* (distr. as *Leandra* sp.). Brazil to British Guiana and Central America. "Azul mullaca," "tinta mullaca."

Clidemia obliqua (Griseb.) Cogn. Melast. 1017. 1891. *Staphidiastrum obliquum* Griseb. ex Cogn. l.c.

A virgately branched shrub with acutely angled branches, the younger with the petioles, peduncles, and calyces slightly scurfy-puberulent or glabrate; petioles 2–4 cm. long; leaves nearly oblong, rounded at base, acutely long-acuminate, entire or nearly glabrous except minutely hirtellous on the 5–7 nerves beneath; cymes to about 1 cm. long, the few to many 4-merous flowers glomerate; calyx tube narrow, pulverulent, 3.5 mm. long, the spreading outer teeth 1 mm. long; petals apparently white, 1.5 mm. long; ovary not free, fruit ovoid, 5 mm. long.—The rather thin leaves are about equal in size, mostly 4–5 cm. wide, about 3 times longer. F.M. Neg. 17235.

Puno: San Gabán, *Lechler 2437*, type. Bolivia(?).

Clidemia petiolata DC. Prodr. 3: 157. 1828; 1007.

Younger branches, petioles and leaves beneath sparsely spreading-hispid; petioles tortuous, 2–8 cm. long; leaves broadly ovate, cordate at base, glabrous or nearly so above, 5–7-nerved or the subplinerved veins obviously reticulate beneath, to 2 dm. long and half as wide or larger; flowers 2 or 3 or few, subsessile in the axils; petals obovate, 2 mm. long; calyx tube 3–4 mm. long, densely long-setose, scarcely lobed but somewhat glandular, 4-toothed, the teeth triangular-subulate, about 1 mm. long, sparsely to densely ciliate (or setulose); ovary nearly inferior, apically glabrous.—Typically the plant is erect from a reclining base. Some material in herbaria referred here by Cogniaux seems rather to be *C. Epiphytica* for the flowers are well pedicelled and the pubescence is much softer. F.M. Neg. 36349.

Peru: (fide Gleason in Flora of Surinam). Panama; Dutch and French Guiana.

Clidemia pilosa [Pavón] D. Don, Mem. Wern. Soc. 4: 308. 1823. *Melastoma pilosa* Pav. ex D. Don, l.c., in syn. *C. impetiolaris* (Naud.) Cogn. Melast. 1016. 1891. *Staphidiastrum impetiolare* Naud. Ann. Sci. Nat. sér. 3. 17: 329. 1852. *Maieta pilosa* Baill. Hist. Pl. 7: 19. *fig. 27*. 1880. *C. testiculata* (Triana) Gleason, Bull. Torrey Club 58: 80. 1931 as to Peru spec.

A low shrub, the pubescence, especially that of the branches, densely scurfy-stellate-tomentose as well as more or less setulose; petioles rarely 4 mm. long, usually nearly lacking, the leaves broadly ovate-cordate, to 1 dm. broad, shortly acuminate, denticulate and ciliate, slightly scurfy and sparsely setulose both sides, subequal, 9-nerved, but the outer nerve partial; flowers 4-merous in slender

cymes, 1.5–3 cm. long, the narrow calyces 4 mm. long or longer, the widely spreading outer teeth strongly ciliate-setose, to 2 mm. long; petals white, 2–3 (4) mm. long; fruit ovoid, 7–8 mm. long, edible. —Near *C. ciliata* [Pav.] D. Don. *C. testiculata* as to the Peruvian specimen cited by Gleason seems to match exactly the Pavón type of *C. pilosa;* the similar but more robust *C. testiculata* of northern South America and Costa Rica bears vesicles at the base of the short petioles. Shrub, to 4 meters; petals pink; fruit blue or purple (K. & S.). F.M. Negs. 29497; 17227.

Junín: Pichis Trail, Dos de Mayo, 1,700 meters, *Killip & Smith 25798* (det. Gleason as *C. testiculata*).—Ayacucho: Aina, near Huanta, *Killip & Smith 22706*. Without locality, *Pavón*, type. Bolivia; Colombia.

Clidemia procumbens Gleason, Bull. Torrey Club 58: 255. 1931.

Stems procumbent and rooting at base, herbaceous erect part to 1 dm. high, leafy only above, early thinly brown-scurfy, soon glabrous; petioles stout, 5–18 cm. long, nearly glabrous; leaves ovate, broadly oblong or somewhat obovate, obtuse at base, to subcordate, acuminate, obscurely denticulate, 5-nerved, thin, to 2.5 dm. long, 1.5 dm. wide, glabrous or minutely scurfy on the veins beneath; panicle solitary from an upper axil, freely branched, 10–15 cm. long, sparsely to obviously glandular-pilose, the 4-merous flowers sessile; calyx tube urceolate, the ovate glabrous sepals 1 mm. long; ovary inferior, apically glabrous; fruit blue, globose, 5 mm. thick.

Loreto: Santa Rosa, below Yurimaguas, *Killip & Smith 28852*, type; (also *28423; 28473; 28470; 29567; 29729*, det. Gl.).—Junín: Low altitude, *Killip & Smith* (*26659; 26734*, fide Gleason).

Clidemia purpurea [Pav.] D. Don, Mem. Wern. Soc. 4: 308. 1823; 994. *Melastoma purpurea* Pav. ex D. Don, l.c., in syn.

Younger branches, petioles and peduncles densely scurfy and spreading-setulose; petioles mostly 1–2 cm. long; leaves often very unequal, the larger 6–9 cm. broad, 5-nerved or obscurely 7-nerved, sparsely setulose above, scarcely puberulent beneath, long-acuminate, remotely and minutely denticulate; cymes early shorter than 1 cm. but probably elongating; calyx very sparsely hirsutulous, the inner teeth obsolete, the outer much shorter than the tube, barely 1 mm. long; fruit globose, 4 mm. thick.—Clearly distinct from *C. dentata*. The type was actually collected in Guayaquil by Tafalla. F.M. Neg. 17308.

Peru (perhaps). Ecuador.

Clidemia radicans Pilger, Verh. Bot. Ver. Brandenb. 47: 179. 1905.

Similar to *C. petiolata* but scandent; stems and petioles densely villous-hirsute; flowers few to rather many, well pedicellate; calyx tube and teeth densely hispid; petals elliptic, whitish, 2.5 mm. long, the outer calyx teeth about as long.—F.M. Neg. 17236.

Loreto: Soledad, *Killip & Smith 29767*. Leticia, *Ule 6869*. Brazil.

Clidemia rubra (Aubl.) Mart. Nov. Gen. & Sp. 3: 152. *pl. 281*. 1829; 1004. *Melastoma rubra* Aubl. Pl. Guian. 1: 416. *pl. 161*. 1775.

Herb or woody below, to about 1 meter high, the stem densely villous-hirsute with reddish crinkly trichomes, the leaves harshly pubescent above, crisply hirsutulous beneath, acute, to 1.5 dm. long and half as broad, often much smaller, 5-plinerved, rounded to subcordate at base, acute, often sessile but often also petioled even to 3 cm.; flowers few, sessile; calyx tube 3.5–4 mm. long, the hirsute pubescence usually glandular, the roundish lobes to 1 mm. long, the subulate outer teeth as long or longer and recurved; petals red or sometimes white, 3–5 mm. long. *C. Bonplandii* (Naud.) Cogn. 1005, if distinguishable, is not, I think, as to the single Peruvian specimen from Chicoplaya by Pavón, referred to it by Cogniaux. But, fide R. O. Williams, Fl. Trinidad, 1, pt. 6: 400, it is *C. debilis* Crueg., fewer flowers in each cluster, petioles 1–5 cm. long.—Illustrated, Bonpl. Melast. 89. *pl. 39*. F.M. Neg. 36846 (*Bonplandii* fide Cogn.).

Huánuco: Chicoplaya, *Pavón*.—San Martín: Moyobamba, *Mathews 1293;* Tarapoto, *Williams 5375; 6359; 7644* (det. Gl.).—Loreto: (*Killip & Smith 29213*, det. Gl.). Brazil to Mexico.

Clidemia septuplinervia Cogn. in Mart. Fl. Bras. 14, pt. 4: 506. 1888; 1008.

Younger branches minutely scurfy; petioles 1–2 (–5) cm. long; leaves thin, narrowly ovate, 8–12 cm. broad, long-attenuate to the petiole, long-acuminate, 5–7-plinerved and in addition with 1 or 2 marginal nerves near the base; flowers cymose-fasciculate, shortly pedicellate; calyx tube 2.5 mm. long, with fimbriate torus, the linear outer teeth sparsely long-setulose, 1.5–2 mm. long; petals broadly oblong, retuse, 1.5 mm. long; anthers oblong, blunt, 1 mm. long, connective smooth, the filament 1.5 mm. long; fruit 4–5 mm. thick.—*C. heteroneura* (Schrank & Mart.) Cogn., 1009, Amazonian, is similar but the flowers are sessile, the outer calyx teeth scarcely

0.5 mm. long. Simulates *Henriettea* as the inflorescence is often borne on older stems below the existing leaves. Fruit bright blue (K. & S.); calyx deep red. Well marked by the 2–3 pairs of nerves that originate far above the base. F.M. Neg. 17309.

Loreto: Río Itaya, *Killip & Smith 28346; 29449; 29641* (det. Gl.). Yurimaguas, *Poeppig 2203*, type; *Williams 4555* (det. Gl.).—Junín: Puerto Bermúdez, *Killip & Smith 26481* (det. Gl.). Río Mazán, *Schunke 177*. Ecuador; Jamaica.

Clidemia serpens (Triana) Cogn. Melast. 1025. 1891. *Sagraea serpens* Triana, Trans. Linn. Soc. 28: 139. 1871.

Subscandent epiphytic shrub with slender creeping stems; petioles, as the branches, very slender, the former 8–15 cm. long; leaves ovate-acute, lightly cordate, 8–13 cm. long, 6–9 cm. broad, unequally dentate, 7–9-nerved, minutely ciliate, otherwise glabrate; cymes 1–2 cm. long, 2 to few-flowered, the pedicels capillary, apically minutely bibracteolate, 5–12 mm. long; calyx glabrate, urceolate, 2–2.5 mm. long, the ciliate oblong-lanceolate outer teeth finally reflexed, 1.5–2 mm. long; petals minute, oblong-ovate.—One of the segregate species in Peru may belong here. F.M. Neg. 36353.

Peru (possibly). Colombia.

Clidemia sessiliflora (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 505. 1888; 1008. *Staphidium sessiliflorum* Naud. Ann. Sci. Nat. sér. 3. 17: 311. 1852. *C. peruviana* Gleason, Bull. Torrey Club 58: 255. 1931.

Branches obscurely tetragonous, becoming terete; petioles 1.5–2.5 cm. long; leaves oblong-elliptic, obtuse or sometimes rounded at base, abruptly and narrowly long-caudate-acuminate, shortly 3–5-plinerved, glabrous or nearly so above, 4.5–7 cm. broad; flowers 4-merous, sessile in the leaf axis, the calyx tube 2.5 mm. long, the outer teeth 0.25 mm.; petals 2.5 (–8?) mm. long; berry subglobose, 3 mm. thick. *C. peruviana* was segregated chiefly on the basis of its small petals, these having been described for *C. sessiliflora* as 7–8 mm. long—clearly an error, I think, in view of the size of the calyx. Otherwise, as to leaf cuneation at base and pubescence, the types essentially match.—Bushy with slender branches, 2–3 meters high. The first pair of nerves may be nearly basal; the leaf caudation is strikingly abrupt, 1–2 cm. long. F.M. Neg. 17239.

Huánuco: Cuchero, *Poeppig 119*, type.—Junín: Hacienda Schunke, La Merced, *5740; Killip & Smith 25411* (type, *C. peruviana*);

Killip & Smith 24699; 25500. Pichis Trail, 1,600 meters, *Killip & Smith 25648* (all det. Gl.). Colombia.

Clidemia simulans Macbr., spec. nov.

Arbuscula ad 4 m. alta; ramulis superioribus petiolis pedunculisque ferrugineo-hispidis et minutissime granulosis; petiolis 10 mm. et 5 mm. longis; foliis valde inaequalibus in eodem jugo (majoribus circa 12 cm. longis, 1.5 cm. latis, minoribus 4 cm. longis, 1.5 cm. latis), oblongo-ellipticis, basi acutis, apice fere caudato-acuminatis, integris, remote ciliolatis, membranaceis, 5-nerviis, supra sparse hispidulis, subtus praecipue vel solum ad nervos plus minusve hispidis; paniculis paucifloris 3.5–5.5 cm. longis, vix 2 cm. latis; pedicellis glabris 3 mm. longis; calyce tubo turbinato-campanulato glabro 3 mm. longo, limbo ultra ovarium producto 5 undulato-lobato dentibus exterioribus fere obsoletis apice setosis; petalis 5, oblongo-obovatis 5–5.5 mm. longis; antherae subulatae 3 et 4 mm. longae, connectivo basi producto; ovarium fere inferum; stylus 6 mm. longus, stigmate truncato.—Simulates *C. naevula* (Naud.) Triana, and *Ossaea cucullata* Gleason. In higher ground where forest is less dense; petals white, stamens yellow, calyx limb red (Stork & Horton).

Huánuco: 5 km. northeast of Tingo Maria, 700 meters, *Stork & Horton 9516*, type.

Clidemia Sprucei Gleason, Bull. Torrey Club 58: 85. 1931; 977. *Maieta dentata* (Triana) Cogn. in Mart. Fl. Bras. 14, pt. 4: 465. 1888. *Calophysa dentata* Triana, Trans. Linn. Soc. 28: 140. 1871.

Very similar to *C. heterophylla*, but the inflorescence often nearly glomerate, the flowers 4-merous, the calyx and outer teeth sparsely and minutely stellate.—F.M. Neg. 17192.

Huánuco: On the Monzón, Prov. Huamalies, 700 meters, *Weberbauer 3665*.—San Martín: Near Tarapoto, *Spruce 4441*.—Puno: San Gabán, *Lechler 2306*.

Clidemia strigillosa (Sw.) DC. Prodr. 3: 159. 1828; 995. *Melastoma strigillosa* Sw. Prodr. 71. 1788.

Tall shrub, the pubescence typically stellate and glandular-hirsute intermixed especially on younger stems and crowded panicles or cymes; petioles 1–2 cm. long; leaves ovate-lanceolate, somewhat emarginate at base, acuminate, obviously to obscurely denticulate, 7-nerved, becoming bullate-hispid above, densely foveolate and stellate-tomentose beneath; calyx tube 3.5 mm. long, the oblong

interior lobes 3 mm. long, the linear subulate outer ones to twice as long; petals about 4 mm. long; ovary apically glandular setose.—The Ruiz & Pavón collection seems to be scarcely typical; the outer nerves are only partly apparent, the denticulations scarcely at all, and the inflorescence is 6 cm. long, nearly 5 cm. wide, the calyx with its filiform lobes 8–10 mm. long. Anthers slenderly subulate, 2.5 mm. long, the slender connective produced 0.7 mm. (Gleason).

Huánuco: Chicoplaya, *Ruiz & Pavón* (det. Markgr.). To the Guianas and the West Indies.

Clidemia tococoidea (DC.) Gleason, Bull. Torrey Club 58: 81. 1931; 979. *Calophysa tococoidea* DC. Prodr. 3: 166. 1828. *Maieta tococoidea* Cogn. in Mart. Fl. Bras. 14, pt. 4: 465. 1888.

Branches slender, the younger as well as the petioles and leaves rather densely setose or hispid, otherwise glabrous, but the long trichomes sometimes glandular especially on the calyx or this only puberulent; petioles elongate; leaves ovate, abruptly acuminate, 5–7 (–9)-nerved, to 1 dm. wide or larger; cymes small, often only 1 cm. long, few-flowered; calyx tube about 3 mm. long, the outer subulate teeth 2 mm. long; petals 4–5 mm. long.—Petioles vesicular at base. F.M. Neg. 26064.

San Martín: Tocache, *Poeppig 1794*. Brazil; Ecuador; Central America.

Clidemia Ulei Pilger, Verh. Bot. Ver. Brandenb. 47: 180. 1905.

Branchlets, petioles and leaves beneath densely subappressed-villous-hirsute; leaves ovate, gradually short-acuminate, rounded or emarginate at base, the older somewhat bullate, shortly and sparsely setose above, minutely crenulate, 5-nerved, with 2 partial marginal nerves, all but the lower subsessile; cymes few-flowered to 2.5 cm. long; calyx tube cylindrical, setulose-glandular, the 4 very short lobes bearing an outer longer setaceous one; petals white, obtuse, 1.5 mm. long; stigma not at all dilated; fruit globose, glandular-setulose. —Exceptionally a leaf is petioled even to 9 mm. long. Petals light pink, fruit deep pink (K. & S.). F.M. Neg. 17242.

Loreto: Iquitos, *Ule 6235*. Pró, *Williams 1974* (det. Gl.). Near Iquitos, *Williams 1452; Killip & Smith 27081* (det. Gl.). Lower Río Nanay, *Williams 407* (distrib. as *C. dentata*). "Mullaca."

Clidemia umbonata [Schrank & Mart]. DC. Prodr. 3: 158. 1828; 998. *Melastoma umbonatum* Schrank & Mart. mss. ex DC. l.c.

Clidemia affinis (Naud.) Cogn. in Mart. Fl. Bras. 14, pt. 4: 493. *pl. 104.* 1888; 1001. *Staphidium affine* Naud. Ann. Sci. Nat. sér. 3. 17: 313. 1852.

Slender-stemmed shrub, glabrate or sparsely hirtellous, often slightly glandular, slightly stellate-puberulent with open axillary or terminal panicles; leaves ovate, 4–8 cm. wide, long-acuminate, subentire, 7–9-nerved, becoming bullate-strigose above, densely foveolate and more or less hirsute beneath; panicles loose, to a dm. long and many-flowered, the upper sometimes reduced, the flowers clustered toward the tips of the branchlets, the uppermost of these short or obsolete; calyx campanulate, the tube 3 mm. long, the outer calyx teeth 1–1.5 mm. longer than the inner; petals rounded at tip, 3–4 mm. long, white, several-nerved; ovary free to the middle, or nearly adherent to the pilose apex, 5-celled.—I follow Gleason, Brittonia 1: 167. 1932, in including *C. affinis* here; also, at least as to Peru, *C. novemnervia* (DC.) Tr., 1000, to which in 1931 Gleason referred *Williams 751.* However, without explanation, this species is maintained by him in Brittonia 3: 111. 1939. Leaves sometimes narrower (var. *angustifolia* Cogn.) and often only partially 7-nerved or merely 7-nerved. Determinations by Gleason. F.M. Negs. 17215; 6439 (*affinis*); 25880 (*novemnervia*).

Loreto: Yurimaguas, *Killip & Smith 28175; Williams 3844.* Río Nanay, *Williams 749; 751; 771; 800.* Pebas, *Williams 1900.* Río Mazán, *Schunke 191.* Brazil. Amazon Valley to Central America and the Caribbean. "Laja mullaca," "pichico caspi."

Clidemia urticoides Pilger, Verh. Bot. Ver. Brandenb. 47: 180. 1905.

Stems apparently sprawling or ascending and subherbaceous, soon glabrous; petioles elongate, the leaves subequal, broadly rounded or subcordate, somewhat acuminate, glabrous or slightly scurfy on the 9 nerves beneath, obscurely crenulate-denticulate; cymes many-flowered, densely glomerate, sessile or nearly; calyx tube about 3 mm. long, scurfy, with 4 obtuse triangular-ovate lobes, 2.5 mm. long; petals obtuse, 2 mm. long; style thick, exserted 4 mm.—Allied by the author to *C. cordata.* Seems amply distinct from that and *C. crotonifolia* in character of inflorescence, but the specimens cited were referred by Gleason to *C. cordata.* Fruit reddish-purple (K. & S.). F.M. Neg. 17243.

Loreto: Leticia (*Ule 6204*, type). La Victoria, *Williams 2709.*—Junín: Puerto Yessup, *Killip & Smith 26340.*

40. BELLUCIA Necker

Loreya DC. Prodr. 3: 178. 1828.

Shrubs or trees with coriaceous 3–5-plinerved petioled leaves and large or small flowers, these solitary, fascicled or in short cymes, often axillary or sometimes borne on the older wood below the terminally clustered leaves. Calyx at anthesis splitting into several regular or irregular lobes or rarely circumscissile. Stamens alike, 10–16, the filaments short, stout or slender, the anthers often somewhat coherent, 4-celled, minutely 1- or 2-pored, the connective more or less elevated but not prolonged, smooth. Ovary inferior, 5- or 8–15-celled, the short style with a capitate or ovoid stigma. Fruit baccate, many seeded, said to be edible.—Cogniaux separated the species on the character of the calyx lobes, which certainly appears to be obscure, of doubtful value, but which, awaiting study, must be followed here; there are probably fewer species than listed.

Gleason, Bull. Torrey Club 60: 385. 1933, showed that species included in *Loreya* have 2-pored anthers; but 1-pored anthers, a 5-celled ovary, flowers borne on the old wood, have been considered the diagnostic characters of the DeCandolle genus. These characters, as evidenced elsewhere in the family, are not necessarily indicative of generic values, and I fail to see a possible realignment of the species. Gleason notices an apparent acuteness in bud of the petals of *Loreya*, not equally noticeable however for all species, and, with reason writes: "The genera . . . are weakly separated." Baillon united under one name the species distributed between *Loreya* and *Bellucia*, an action preferable it seems to me, to "straining at a gnat" to keep them apart; for after all *Loreya* was proposed for *one* species, while now we know several either as Bellucias or Loreyas that break in greater or less degree the original group characters, so, actually, are we not now weakly separating two generic *names* rather than dealing with two genera? The genus *Bellucia*, it may be remarked, could but for practical reasons, or convenience, be extended to include *Henriettea*.

Anthers 1-pored; branchlets toward tip and upper petioles densely strigose.

Petals roseate, about 5 mm. long . . . . . *B. umbellata.*

Petals white, about 10 mm. long . . . . . *B. mespiloides.*

Anthers 2-pored; branchlets and upper petioles glabrous or minutely hirsutulous or furfuraceous.

Pubescence a scurfy puberulence continuous on the younger parts. *B. Spruceana.*

Pubescence lacking or sparse and minute.

Flowers solitary; calyx lobes 5, regular, subequaling tube; glabrous species.....*B. pentamera.*

Flowers usually fasciculate; calyx lobes irregular or shorter than tube; glabrate, rarely glabrous species.

Calyx tube regular.....*B. Weberbaueri.*

Calyx tube irregular.....*B. imperialis.*

Bellucia imperialis Sald. & Cogn. in Mart. Fl. Bras. 14, pt. 4: 515. *pl. 109.* 1888; 1029.

A tree, at least 10 meters high, the younger parts minutely scurfy-puberulent, the broadly ovate leaves puberulent-pilose beneath; petioles stout, 2–5 cm. long; leaves to 2.5 dm. long, 11–17 cm. broad, 5-plinerved; panicles rather few-flowered; pedicels to 1.5 cm. long; calyx about 2 cm. wide, at anthesis splitting into several irregular lobes; petals white, irregularly obovate or one somewhat lobed, 17–20 mm. long, 10–15 mm. wide; filaments 8–9 mm. long; anthers 5 mm. long, 3–3.5 mm. thick; style little flexuous, 2 cm. long, the stigma 3 mm. broad.

Río Acre: Río Yaco region, *Krukoff 5580* (det. Gl.). Bolivia; Brazil.

Bellucia mespiloides (Miq.) Macbr., comb. nov. *Loreya mespiloides* Miq. Linnaea 18: 619. 1844; 1033.

Younger branches densely brown-strigose as the petioles (3–5 cm. long); leaves minutely scabrous or villous on the nerves above, short-villous beneath, to 2.5 dm. long, 1.5 dm. wide, often smaller, acutely acuminate, rarely dentate; pedicels 1–2 cm. long; calyx tube 5 mm. long, 10 mm. wide, strigose; petals white, 10 mm. long; anthers 1-pored; style thickened to the stigma, 8 mm. long.

Huánuco: Chicoplaya and Pueblo Nuevo, *Ruiz & Pavón* (fide Cogn.). To the Guianas.

Bellucia pentamera Naud. Ann. Sci. Nat. sér. 3. 16: 105. 1851; 1030.

Glabrous shrub or tree with ovate leaves acute at base and apex or shortly acuminate, to 2 dm. long, 6–9 cm. wide or larger, somewhat glaucous beneath, lustrous above; petioles 1–2 (–3.5) cm. long; flowers solitary, the pedicels 5–10 mm. long; style 8–9 mm. long, the slightly dilated stigma deeply multisulcate; calyx 1.5–2 cm. wide, strongly lobed, the 5 equal or subequal triangular acute divisions little shorter than the tube.—*B. grossularioides* (L.) Triana

has a nearly truncate calyx, the limb merely lacerating; to it Gleason has referred tentatively *Killip & Smith 24626* from Junín and *Williams 643; 1588; 2073,* all from Loreto, and perhaps as well included here until there is a better understanding of the species' variations. Said to attain 10 meters, the flowers white, the fruit yellow. F.M. Neg. 36338.

Huánuco: Chicoplaya, *Ruiz & Pavón* (det. Markgr.).—San Martín: Moyobamba, (*Mathews*); *Weberbauer 4505,* pt. (det. Cogn.); 290.—Cuzco: *Gay.*—Loreto: Near Yurimaguas, *Poeppig.* Iquitos, *Tessmann 3523* (det. Markgr.). Brazil. "Manzanay," "monte," "bispero," "nispero," "nispero del monte."

Bellucia Spruceana (Benth.) Macbr., comb. nov. *Loreya Spruceana* Benth. ex Triana, Trans. Linn. Soc. 28: 143. 1871; 1032.

Similar to *L. mespiloides* but the pubescence furfuraceous.—Typically, according to Gleason, Bull. Torrey Club 58: 258, the uppermost pairs of leaf nerves arise only 1–2 cm. from the somewhat rounded base; the secondaries are prominently elevated beneath, 5–6 mm. apart, and the calyx is scurfy only without; anthers 2-pored. In the Iquitos plants the leaves are rather distinctly cuneate at base, the upper nerves originate 7 cm. high, the secondaries are slightly elevated, 8–10 mm. apart, and the calyx tube is scurfy also within. F.M. Neg. 17253.

Loreto: Iquitos, *Killip & Smith 27455* (det. Gl. with query). Brazil.

Bellucia umbellata Gleason, Bull. Torrey Club 58: 257. 1931.

Small tree with densely leafy strigose-tomentulose twigs that are 4-angled toward the tips; petioles 2–3 cm. long; leaves thin, oblong-ovate-obovate, usually somewhat unequal, acuminate but rounded at base, entire, sparsely strigose on the nerves above, slightly pubescent beneath where conspicuously fleshy-reticulate, to 3 dm. long and half as wide; peduncled inflorescence furfuraceous, to about 20-flowered; flowers 5-merous on pedicels 1 cm. long; calyx lobes minute, 3 mm. wide; petals 5.5 mm. long, ovate-triangular, provided within with 1 central and 3 lateral lobes, all deflexed and 1 mm. long; anthers 5.5 mm. long, 4-celled, dehiscing by 2 pores.—Unique in character of the roseate or rose and yellow flowers.

Loreto: Mishuyacu near Iquitos, *Klug 131,* type; *19; 709; 859; 2545.*

Bellucia Weberbaueri Cogn. Bot. Jahrb. 42: 148. 1908.

Branches glabrous; petioles 3–5 cm. long; leaves 5-plinerved, somewhat undulate, early furfuraceous on the veins, finally glabrous, ample; flowers fasciculate or sometimes in few-flowered cymes, the pedicels 1–2 cm. long, lightly scurfy-pubescent as the calyx, this 2 cm. long, the triangular lobes shorter; flowers fragrant, white within, rose-colored without; style 2 cm. long.—Tree, about 10 meters. F.M. Neg. 17250.

Junín: Chanchamayo Valley, *Schunke 601*(?) (glabrous; det. Gl.). —San Martín: Moyobamba, *Weberbauer 4505*, type; *Williams 5591* (det. Gl.).—Loreto: Near Iquitos, *Killip & Smith 26898* (det. Gl.). Lower Río Huallaga, *Williams 3969; 7828* (det. Gl.). Brazil. "Nispero."

41. HENRIETTEA DC.

Henriettella Naud. Ann. Sci. Nat. sér. 3. 18: 107. 1852.

Shrubs or trees with petioled 3–5-nerved or plinerved leaves and small 5–6-merous flowers, solitary or borne in clusters (rarely somewhat panicled) on the branches below fallen leaves, or sometimes in the axils of the lower ones. Calyx tube campanulate, the often somewhat dilated limb lobed, truncate or very obscurely lobed and minutely toothed. Petals obtuse, acutish to acuminate, sometimes cucullate or minutely setose apically. Stamens alike, with slender filaments and anthers, these obtuse to acuminate or rostrate, the connective neither prolonged nor spurred. Ovary inferior, 4–5-celled, the style stout to filiform, the stigma punctiform or truncate. Fruit baccate.

Baillon is followed in drawing the generic lines of *Henriettea* to include *Henriettella* because, all species considered, there seems to be no significant concomitance of the characters of petals, anthers or pubescence that have been used to maintain two similar but distinct genera; the characters moreover often exist in degrees of development. At best the genus is only a convenient entity, essentially crowding *Bellucia* on one hand, *Ossaea* and *Clidemia* on the other; classification here is simplified and clarified by the maintainance of the four groups, in spite of their merging in the case of border line species; but the insistence on further segregation emphasizes differences that ill accord with their importance elsewhere in the family.

Leaves plinerved.

Leaves glabrate, not at all hirsute; slightly stellate-puberulent beneath ..... *H. loretensis.*

Leaves somewhat scabrous and hirsute.

Flowers on slender pedicels; trichomes minutely stellate-based. *H. sylvestris.*

Flowers sessile or subsessile.

Calyx about 2 mm. long, scarcely denticulate; trichomes simple..... *H. verrucosa.*

Calyx tube 5 mm. long, lobed; trichomes stellate at base. *H. stellaris.*

Leaves basally nerved.

Flowers sessile, small, the calyx hirsute; trichomes simple. *H. aggregata.*

Flowers shortly pedicellate, large, the calyx strigose; trichomes minutely stellate-based..... *H. lasiostylis.*

Henriettea aggregata (D. Don) Macbr., comb. nov. *Henriettella aggregata* (D. Don) Triana, Trans. Linn. Soc. 28: 143. 1871; 1047. *Clidemia aggregata* D. Don, Mem. Wern. Soc. 4: 309. 1823.

Branchlets and petioles densely long-hirsute; petioles 1–1.5 cm. long; leaves 7–10 cm. long, 3–4 cm. wide, acute, 3-nerved, densely short-hispidulous above; flowers sessile or subsessile, the campanulate calyx densely hirsute, 3 mm. long, the broadly rounded lobes 1.5 mm. long.—Foliage and growing parts purplish tinged. F.M. Neg. 17254.

Huánuco: Chicoplaya, *Pavón*, type.

Henriettea lasiostylis Pilger, Verh. Bot. Ver. Brandenb. 47: 183. 1905.

Branchlets apically strigose-setose, soon glabrate, the petioles, these to 3 cm. long, and the leaves beneath on the 3 nerves sparsely so; leaves elliptic, acute, or sometimes obovate, glabrous except for the nerves or lightly ciliate, to 18 cm. long, 10 cm. wide; flowers subsessile or shortly pedicelled, the pedicels 3–6 mm. long; calyx tube narrowly campanulate, attenuate to base, sparsely strigose, 1 cm. long, the limb with 5 very short lobes, truncate; petals tomentose, subobtuse, about 15 mm. long; anthers attenuate, 1 cm. long; style villous nearly to tip, soon exserted 1.5–2 cm.—Shrub or tree, 5 meters; stamens blue; petals white. F.M. Neg. 17264.

Loreto: Río Mazán, *Schunke 169*. Brazil.

Henriettea loretensis (Gleason) Macbr., comb. nov. *Henriettella loretensis* Gleason, Phytologia 1: 46. 1933.

Branchlets soon glabrate and terete; petioles about 15 mm. long; leaves thin, oblong-elliptic, entire, cuneate at base, abruptly short-

acuminate, 3-plinerved, 4–4.5 cm. wide, glabrous above, very sparsely stellate-puberulent on mid-nerve beneath; flowers 4-merous on pedicels 4 mm. long; calyx glabrous, the tube truncate, the outer subulate teeth minute; petals triangular, acute, strongly thickened above the middle, 3 mm. long; stamens isomorphic, the anthers 2 mm. long, the connective simple; ovary inferior, 4-celled, style glabrous, 7 mm. long, the stigma truncate.

Loreto: Florida, Río Putumayo, *Klug 2215*. "Jacagnino-ey" (Huitoto).

Henriettea stellaris Berg ex Triana, Trans. Linn. Soc. 28: 145. 1871; 1035.

Younger branches, calyces and to some extent the leaves, especially the 5 nerves beneath, closely appressed-strigose, the setae stellate at base; leaves rigid, drying brittle, smooth and glabrous or nearly above, distinctly plinerved, acute at base, 1–2 dm. long and half as wide, the petioles about 1 cm. long; flowers usually several on pedicels 1–4 mm. long; calyx lobes 3 mm. long, rigid; petals suborbicular, apiculate below the tip, puberulent without, 4 mm. long, white; anthers 6 mm. long, rostrate-acuminate.—The pubescence is so close that the plant is seemingly smooth. *H. Spruceana* Cogn., Amazonian, with larger flowers is similar but the leaves are softly pilose beneath. Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 112*. F.M. Neg. 17267.

Loreto: Lower Río Nanay, *Williams 619*. Near Iquitos, *Klug 746* (both det. Gl.). Río Mazán, *Schunke 154*. Brazil. "Huito mullo."

Henriettea sylvestris (Gleason) Macbr., comb. nov. *Henriettella sylvestris* Gleason, Phytologia 1: 108. 1934.

Branchlets apically strigose, becoming glabrate; petioles 1–2 cm. long, hirsute above; leaves 5-plinerved, shortly strigose on the nerves and veins beneath, lightly scabrous between them, slightly so above, the midnerve hispid; pedicels 5–10 mm. long, nearly glabrous; calyx glabrous, the lobes broadly rounded, the outer teeth verruciform.—Nearly *H. fascicularis* (Sw.) Triana, 1042, of the West Indies but much smoother; notwithstanding the many collections, petals are unknown, probably acute.

Junín: La Merced, *5493*.—San Martín: Lamas, *Williams 6392*.—Loreto: Pebas, *Williams 1717; 1736; 1864*. La Victoria, *Williams 2972*. Caballo-Cocha, *Williams 2091*.—Río Acre: *Krukoff 5272*, type. "Hullpa caspi."

Henriettea verrucosa [Berg] Macbr., comb. nov. *Henriettella verrucosa* [O. Berg] Triana, Trans. Linn. Soc. 28: 144. 1871; 1042. *Clidemia verrucosa* O. Berg ex Triana, l.c., in syn.

Branchlets appressed-setulose; leaves 5-plinerved, acuminate at base, shortly acute, slightly obovate, slender-petioled, about 7 cm. long, 4 cm. wide, shortly callous-setulose above, more minutely so beneath; flowers sessile or subsessile; calyx 2 mm. long; petals acute; anthers 1.5 mm. long; style 3 mm. long, the stigma subcapitulate.—F.M. Neg. 25897.

San Martín: In the mountains of the Río Mayo, near Tarapoto, *Spruce 4001*, type. "Uchpa caspi."

42. OSSAEA DC.

Shrubs very similar in general and also in technical character to *Clidemia* but the petals ovate-lanceolate or narrower, acuminate and at least characteristically cucullate and apiculate below the tip. It is therefore nearly *Henriettea* except that the axillary flowers or inflorescences are leafy-subtended as in *Clidemia*. The anthers are usually narrow or subulate. One species has leaves vesicular at base.—Some specimens of *Leandra* may easily be confused with this group.

Leaves vesicular at base.....*O. bullifera.*

Leaves so far as known not vesicular.

Pedicels solitary, 1–2 cm. long or ternate.....*O. capillaris.*

Flowers sessile or cymose.

Branchlets glabrate, lightly hirsute or scurfy; mature calyx costate or the flowers 5-merous.

Branchlets glabrate (lightly hirsute or scurfy when young).

Flowers 4-merous; calyx costate.....*O. micrantha.*

Flowers 5-merous; calyx terete.....*O. araneifera.*

Branchlets obviously scurfy-pubescent.

Flowers in part sessile, 4-merous.....*O. robusta.*

Flowers all pedicellate, 5-merous.....*O. cucullata.*

Branchlets hirsute or setulose (sometimes appressedly); mature calyx little if at all costate.

Leaves 3–5-nerved or not strongly plinerved.

Flowers pedicelled.

Branches densely long-hirsute.....*O. boliviensis.*

Branches lightly hirsute toward tips.....*O. araneifera.*

Flowers sessile.....*O. petiolaris.*
Leaves distinctly plinerved.....*O. heteronervis.*

Ossaea araneifera Markgr. Notizbl. Bot. Gart. Berlin 13: 462. 1937.

Small scandent shrub, the slender branches when young and the petioles hirsute, the ovate long-acuminate leaves glabrous as the inflorescence except for the sparsely setose calyces; leaves 6–10 cm. long, 2.5–3.5 cm. broad, 3-nerved, on petioles 5 mm. long; panicles few-flowered, the linear bracts setulose; calyx 2 mm. long, the inner lobes 1 mm. long, glabrous, the outer subulate, 4 mm. long; flowers 5-merous, the white petals 3.5 mm. long, long-acuminate as the anthers; ovary 3-celled; fruit globose, 2.5 mm. thick.—The fanciful resemblance of the calyx teeth and anthers to legs of spiders suggested the name to the author. Section *Glaziophytum* but flower-size of *O. micrantha.*

Loreto: Wood at the mouth of Zubineta, *Klug 2011*, type.

Ossaea boliviensis (Cogn.) Gleason, Bull. Torrey Club 58: 259. 1931; 988. *Clidemia boliviensis* Cogn. Bull. Torrey Club 17: 94. 1890.

Younger branches, petioles, peduncles and cymes more or less densely pubescent with extremely long, soft, spreading trichomes; petioles 2–6 cm. long; leaves thin, rather unequal and rounded at base, 5-nerved, crenulate, the larger 6–10 cm. broad, the spreading pubescence chiefly on the nerves beneath; cymes short, 3–10-flowered; calyx a little scurfy and sparsely to densely long-pilose, the tube 4 mm. long, the inner lobes minute, the 5 outer filiform-subulate, erect or nearly, at least as long as the tube; fruit subglobose, 10 mm. thick.—Petals, according to Gleason, narrowly lanceolate, gradually acuminate, slightly cucullate, sparsely hirsute without, 5.5 mm. long. Determinations by Gleason.

Junín: Puerto Yessup, *Killip & Smith 26250;* also *26486; 26535.* —San Martín: Tarapoto, *Williams 6572.*—Loreto: *Killip & Smith 28338.* La Victoria, *Williams 5091.* Yurimaguas, *Williams 3905.* Pebas, *Williams 1730.* Bolivia; Brazil. "Mullaca."

Ossaea bullifera (Pilger) Gleason, Bull. Torrey Club 58: 260. 1931. *Leandra bullifera* Pilger, Verh. Bot. Ver. Brandenb. 47: 169. 1905.

Branchlets densely long-setose, the leaves moderately so, some of the trichomes glandular; petioles elongate; leaves rather strongly

unequal, ovate-elliptic, rounded at summit to an acute tip, basally lightly cordate, 7-nerved, the larger vesicular just above the petiole; panicles few-flowered with lax divaricate branches axillary and terminal, the pedicel 1 cm. long; calyx tube 5 mm. long, scurfy and glandular-setulose, not at all lobed, the 4 setuliform teeth 4 mm. long; petals white, fleshy, 5–5.5 mm. long; anthers acute; fruit blue, broadly ellipsoid, 8 mm. long, setose.—F.M. Neg. 16923.

Loreto: Letitia, *Ule 6202*, type. La Victoria, *Williams 3139*.

Ossaea capillaris [Pavón] Cogn. in Mart. Fl. Bras. 14, pt. 4: 550. *pl. 118*. 1888; 1053. *Melastoma capillaris* Pavón ex D. Don, Mem. Wern. Soc. 4: 308. 1823, in syn.; *Clidemia* sp. D. Don, l.c.

Rather low shrub, the younger branchlets characteristically long and densely appressed-silky-pubescent, the narrowly ovate 5–7-plinerved leaves, these about 6 cm. long, 2–2.5 cm. wide, similarly pubescent, but the trichomes somewhat stiffer, usually golden-brown; pedicels sometimes paired or ternate; calyx tube glandular-hirsute, 2.5–3 mm. long, the 4 subulate teeth 1 mm. long; petals 3 mm. long; fruiting calyx terete or nearly so.

Huánuco: Rocky wet cliff, Pampayacu, *5125*. Churubamba, herb 1 meter high, *Mexia 8168*. Chinchao, *Pavón*, type. Casapi (*Mathews 1723*). Cuchero and Pampayacu, *Haenke; Poeppig 6; 95; 1094*.—San Martín: San Roque, *Williams 7793* (distrib. as *Miconia*). Tarapoto, *Spruce*.—Junín: *Killip & Smith 25316* (det. Gl.). Near Perené Bridge, *Killip & Smith 25316*.—Río Acre: *Ule 9672*. "Millua mullaca."

Ossaea cucullata Gleason, Bull. Torrey Club 58: 260. 1931.

Branches subterete, closely brown-furfuraceous; petioles 8–15 mm. long, scurfy below, tomentose above; leaves thin, bright green, glabrous above, minutely scurfy beneath on the 5 plinerves, entire, ovate-lanceolate long-acuminate, to 12 cm. long, 5 cm. wide; cymes lateral, scurfy, many-flowered; calyx tube 2.5 mm. long, obscurely 10-costate, in type softly villous, the trichomes simple; outer calyx teeth conical; petals narrowly lanceolate, 3.5 mm. long, dorsally scurfy and sparsely pilose, the cucullate tip with an ovate tooth; ovary 4-celled, apically villous, nearly superior; style glabrous, 6 mm. long, slender.—Leaves, even to venation, simulate those of *Clidemia naevula*. The species is allied to *O. capillaris* in its globose villous fruit, 3 mm. long, and its 5-merous flowers. *Williams 1235* may be designated as var. **imparata** Macbr., var. nov., hypanthio haud villoso minutissime furfuraceo.

Loreto: Mishuyacu, near Iquitos, *Klug 518*, type; *Klug 1116; Killip & Smith 29949*. Lower Río Huallaga, *Williams 4849; 1235; Killip & Smith 28756* (all the var.).

Ossaea heteronervis (Naud.) Triana, Trans. Linn. Soc. 28: 146. 1871; 1060. *Sagraea heteronervis* Naud. Ann. Sci. Nat. sér. 3. 18: 98. 1852.

Branches obscurely angled, the younger and petioles softly reddish-hirsute; leaves prominently 5–7-plinerved, the 3 middle nerves originating nearly at the middle of the leaves, cuneate at base, acuminate, 6 cm. wide or narrower, becoming strongly bullate and shortly setulose above, softly hirsute beneath; flowers sessile, densely glomerate, 4-merous; calyx villous, the teeth subulate; petals acute, 2–3 mm. long; fruit nearly terete, blue according to Weberbauer.—F.M. Neg. 36318.

Lima: Near Lima, *Gay*, type.—Cuzco: Province Paucartambo, *Weberbauer 6937*.

Ossaea micrantha (Sw.) Macf. Fl. Jam. 2: 49. 1850; 1066. *Melastoma micrantha* Sw. Prodr. 71. 1788.

Slender-branched shrub, the subterete branchlets and calyces glabrate or only slightly scurfy as the leaves on the nerves beneath; petioles 1–2 cm. long; leaves membranous, oblong-lanceolate, 4–7 cm. broad, entire or undulate-margined; panicles 3–5 cm. long, open; flowers all 4-merous, shortly pedicelled, the ovoid calyx 2 mm. long; petals white, lanceolate, 3 mm. long; fruit subglobose, becoming snow-white pellucid.—This species and *O. robusta* are well marked in fruit, the calyx definitely costate.

Huánuco: Cuchero, *Poeppig 92; 1596*.—Loreto: San Antonio, *Williams 3465* (det. Gl.).—Junín: Puerto Bermúdez, etc., *Killip & Smith 25974; 26425; 26903* (det. Gl.). North to Venezuela and Central America.

Ossaea petiolaris (Naud.) Triana, Trans. Linn. Soc. 28: 147. 1871; 1062. *Diclemia petiolaris* Naud. Ann. Sci. Nat. sér. 3. 18: 103. 1852. *Leandra axilliflora* Pilger, Verh. Bot. Ver. Brandenb. 47: 168. 1905, acc. to Ule, Notizbl. Bot. Gart. Berlin 6: 368. 1915.

Obscurely angled branches appressed-villous; petioles elongate; leaves membranous, 5–7 cm. broad, rounded at base, acuminate, entire, 5-nerved, minutely hirtellous above, appressed villous-sericeous beneath; panicles to 1 dm. long with filiform divaricate branches bearing secundly the sessile 4-merous flowers; petals very acute, 3–4 mm. long; fruiting calyx terete.—Simulates secund-flowered species

of *Leandra* but the inflorescences are all axillary. F.M. Negs. 17274; 25901 (*L. axilliflora*).

Loreto: Cerro de Ponasa, *Ule 6736*. Bolivia.

Ossaea robusta (Triana) Cogn. Melast. 1065. 1891. *Octopleura robusta* Triana, Trans. Linn. Soc. 28: 146. 1871.

Similar to *O. micrantha* but densely scurfy-puberulent except the much broader leaves which are slightly scurfy beneath and glabrous above; flowers in part 5-merous, the terminal shortly pedicellate; petals 1.5–2 mm. long.—Branches and inflorescence branches stout; leaves ample. F.M. Negs. 36316; 17276.

Huánuco: Pueblo Nuevo, *Ruiz & Pavón*. Colombia; Ecuador.

43. MYRIASPORA DC.

Abundantly hirsute-hispid shrubs or small trees with axillary flowers borne in clusters of 2 or 3 or solitary. Calyx closed in bud, the upper portion cone-like and deciduous at anthesis. Petals acuminate, strigose without. Stamens equal, the filaments short, stout, the anthers thickly ovoid, obtuse, with a minute terminal pore. Ovary inferior, 10-celled. Style stout, the large capitate stigma more or less conspicuously 5-lobed.

Myriaspora egensis [Mart.] DC. Prodr. 3: 165. 1828; 1068.

Leaves ovate-oblong, 1 or 2 dm. long and about half as wide, obtuse or rounded at base, acuminate, denticulate-ciliate, 5-plinerved; pedicels rarely equaling the petioles, 1–2 cm. long, bracted at base; petals 10–12 mm. long.—The calyces (about 6 mm. long) are shaggy-setose. The only other species(?), *M. decipiens* Naud., has leaves acute at base, 3-plinerved, the flowers solitary in each axil, the pedicels not bracted, usually much shorter than the petioles, the petals 7–8 mm. long. Illustrated, Mart. Fl. Bras. 14, pt. 4: *pl. 120*.

Loreto: La Victoria, *Williams 2704* (det. Gl.). To the Guianas.

44. BLAKEA P. Br.

Valdesia R. & P. Prodr. 67. 1794. *Topobea* Aublet, Pl. Guian. 1: 476. 1775.

Small shrubs often scandent and rooting, or apparently sometimes epiphytic, the leaves striolate by the transverse nerves. Flowers medium size, axillary, few or solitary, subtended more or less closely by 4 (6) coriaceous or foliose bracts that are entirely free or united to greater or less degree. Stamens 12 or twice as many as the usually oblong-obovate petals, equal or nearly, the filaments

oblong-linear with anthers broad, compressed laterally, the connective very thick or the anthers and filaments both narrow, the former pointed, sometimes scarcely. The connective is often spurred posteriorly, especially in species with broad anthers. Fruit baccate, dry or spongy.

At least for the purpose of this work Baillon and others may be followed in including *Topobea* (anthers narrow) in *Blakea;* in any case it seems doubtful if there is any useful purpose in sorting the species into two genera on the characters indicated; the filaments may practically lack in *Blakea* and certainly they are not at all "filiform" (Cogniaux) in some species of *Topobea,* and in at least the Peruvian species the anthers are not "subulate."

There has been misinterpretation of several of the older species which partly accounts for the synonyms; the bracts if coriaceous are generally connate, at least at base, and have sometimes been described as free but inaccurately; when the bracts are herbaceous they are generally entirely free; both characters appear constant for each species.

For convenience two keys have been prepared.

Bracts, at least the outer, free even at base.

Bracts longer than the calyx, rather foliose.

Leaves strikingly or densely pubescent beneath or tomentose.

Pubescence reddish stellate-furfuraceous.

Leaves subrotund.....*B. rotundifolia.*

Leaves elliptic.

Leaves merely acuminate.....*B. Mexiae.*

Leaves abruptly caudate.....*B. paludosa.*

Pubescence hirsute or villous.

Bracts and leaves hirsute, acuminate.....*B. hirsuta.*

Bracts and leaves rounded, apiculate, the former glabrate. *B. villosa.*

Leaves at maturity glabrous or only somewhat pubescent on midrib or at base (*B. paludosa* with appressed tomentum beneath may appear glabrous).

Bracts whitish or pale, soft in texture, often soon spreading. *B. Spruceana.*

Bracts green, firm, appressed (at least 2, sometimes 2 are spreading).

Bracts ovate, acute, 3-nerved.

Pubescence furfuraceous.....*B. brasiliensis.*

Pubescence strigose.....*B. Standleyana.*

Bracts subelliptic, obtuse, indistinctly nerved.

Leaves glabrate or scurfy beneath.....*B. repens.*

Leaves lightly villous beneath.....*B. villosa.*

Bracts shorter than the calyx, rigid.....*B. multiflora.*

Bracts, at least the outer, more or less connate at base or farther.

Bracts conspicuously setose-ciliate.....*B. ciliata.*

Bracts not setose-ciliate.

Leaves evenly and finely striolate-veined as in the *Guttiferae.*

Leaves medium size, 4–8 cm. wide; outer bracts connate only above the base; pedicels mostly 5–8 mm. long.

Leaves acute at rounded base; bracts longer than calyx. *B. ovalis.*

Leaves somewhat narrowed to base; bracts equaling or longer than the calyx.....*B. rosea.*

Leaves small, 2.5–5 cm. wide; outer bracts often connate above the middle; pedicels mostly 1 cm. long or longer. *B. rostrata.*

Leaves unevenly striolate, the alternate transverse veins less pronounced.

Flowers sessile or subsessile.

Inner bracts shortly but obviously and stiffly ciliate. *B. Sawadae.*

Inner bracts eciliate.....*B. latifolia.*

Flowers well pedicelled.....*B. multiflora.*

Alternative key

Bracts conspicuously setose-ciliate.....*B. ciliata.*

Bracts obscurely if at all ciliate.

Pubescence of branchlet tips and nodes entirely or primarily scurfy or wanting.

Flowers subsessile, the pedicels less than 5 mm. long.

Inner bracts sparsely and stiffly ciliolate.....*B. Sawadae.*

Inner bracts eciliate.....*B. latifolia.*

Flowers more or less distinctly pedicelled, some or all of them on pedicels 5 mm. long or longer.

Leaves, at least the younger, densely tomentulose beneath with red or cinnamon colored trichomes; outer bracts 1.5–2 cm. long.

Leaves nearly rotund.....*B. rotundifolia.*

Leaves much longer than broad.

Leaves merely acuminate.....*B. Mexiae.*

Leaves abruptly caudate.....*B. paludosa.*

Leaves glabrate or more or less obscurely scurfy on the nerves beneath.

Leaves merely apiculate at the broadly rounded tip.

Bracts shorter than the calyx, coriaceous...*B. multiflora.*

Bracts longer than the calyx, foliaceous..*B. brasiliensis.*

Leaves more or less abruptly caudate-acuminate.

Leaves usually 4–8 cm. wide.....*B. ovalis, B. rosea.*

Leaves 2.5–3.5 (4.5) cm. wide.....*B. rostrata.*

Pubescence of branchlet tips and nodes obviously if sparsely strigose-setulose or villous.

Pubescence conspicuous, at least on the leaves beneath.

Petioles hirsute.....*B. hirsuta.*

Petioles glabrate or glabrous.....*B. villosa.*

Pubescence wanting or in any case obscure unless for the appressed-setose nodes and branchlet tips.

Bracts firm, green, appressed; pedicels 1–2 cm. long. *B. repens.*

Bracts pale; pedicels soon elongate.

Bracts loose, longer than broad.....*B. Spruceana.*

Bracts appressed, broader than long.....*B. Standleyana.*

Blakea brasiliensis Cogn. in Mart. Fl. Bras. 14, pt. 4: 561. *pl. 121.* 1888; 1076.

Glabrous except for the more or less furfuraceous-puberulent branchlet tips and flowers; petioles 1–2 cm. long; leaves broadly obovate, abruptly and shortly acuminate, rounded to the acute base, to about 1 dm. long and 7 cm. broad; pedicels 1–2 cm. long; bracts coriaceous, the outer 3-nerved, broadly ovate, long-acuminate, 1.5–3 cm. long, the nearly oblong 1-nerved inner ones obtuse; calyx tube 15 mm. broad, the short lobe acutish; petals rose, about 2.5 cm. long; style 12–14 mm. long.—The following collection may rather be referable to *B. Standleyana.*

Loreto: Mouth of Santiago, *Tessmann 4148* (det. Berlin). Brazil.

Blakea ciliata Markgr. Notizbl. Bot. Gart. Berlin 9: 1146. 1927.

Epiphytic shrub with numerous slender terete branchlets; leaves very unequal, oblong-elliptical, the larger only 3.5 cm. wide, 12 cm. long, on petioles 1 cm. long, rounded at base, caudate, 5-nerved, glabrous; bracts all shorter than the calyx, the outer somewhat connate, long-setose-ciliate on the margins, 7 mm. long; flowers 5–6-merous, subsessile, glomerate in the axils of the upper leaves; calyx tube glabrous, 4 mm. long, equaled by the ovate lobes, these white-scurfy without, marginally setose; petals roseate, 8 mm. long; obliquely oval, the dorsal spur nearly obsolete; fruit cyathiform, 5 mm. thick and high, the seeds clavate.—Striking in the setae at the base of the leaves and on bracts. The species seems to furnish further evidence of the essential unity of *Blakea* and *Topobea*, the author calling attention to the fact it shares essential characters from each genus. F.M. Neg. 17294.

Loreto: Mouth of Río Santiago, *Tessmann 4200*, type.

Blakea hirsuta Berg ex Triana, Trans. Linn. Soc. 28: 148. 1871; 1076.

Abundantly hispid or hirsute, especially the younger branchlets, petioles and peduncles, the trichomes widely spreading; petioles 1–1.5 cm. long; leaves obovate-oblong, more or less abruptly acuminate, attenuate at base, glabrous or lightly hirsute above, densely so beneath on the nerves and veins; peduncles typically very short, 3-flowered; bracts subcoriaceous, the outer narrowly ovate, acuminate, about 2 cm. long, twice as long as the oblong inner; calyx glabrous with acute lobes little shorter than the broadly campanulate tube, this 1.5 cm. broad.—In the type the leaves are glabrous above. Var. **hirsutissima** Macbr., var. nov. foliis utrinque hirsutis: pedicellis circa 5 mm. longis. F.M. Neg. 17296.

Loreto: Yurimaguas, *Poeppig 2042*, type. Mouth of Santiago, *Tessmann 4493*, type var. Brazil.

Blakea latifolia (R. & P.) D. Don, Mem. Wern. Soc. 4: 325. 1823; 1074. *Valdesia latifolia* R. & P. Fl. Peruv. 4: *pl. 407*. 1802. *B. sessiliflora* Naud. Ann. Sci. Nat. sér. 3. 18: 144. 1852. *B. chanchamayensis* Macbr. Field Mus. Bot. 4: 178. 1929.

Branchlet tips, petioles and principal leaf nerves beneath more or less rusty scurfy-pubescent, glabrate in age; petioles 1–2.5 cm. long; leaves oblong-elliptic, acute at base, more or less abruptly acuminate, about 12 cm. long, 5–6 cm. wide, strongly 3-nerved, the 2 marginal nerves faint; bracts somewhat furfuraceous, the outer

at least slightly united at base, all shorter than the calyx, subabruptly acute; flowers sessile or subsessile; calyx lobes broadly ovate, subacute.—This is *B. latifolia* as to type, not Cogn. In the Naudin plant, the leaves are attenuate at base and the bracts are described as being free. F.M. Negs. 29491; 36340 (*B. sessiliflora*).

Junín: Vitoc, *Rivero* (type, *B. sessiliflora*); *Ruiz & Pavón*, type. Hacienda Schunke, La Merced, *5676* (type, *B. chanchamayensis*). Chanchamayo Valley, *Schunke 299; 438; 506; 509; 119;* (also *Killip & Smith 24628*, det. Gl. as *B. chanchamayensis*).

Blakea Mexiae Gleason, Bull. Torrey Club 66: 419. 1939.

Terete branches red-tomentose with barbate trichomes 0.5–1 mm. long and longer, simple ones intermixed; petioles 10–15 mm. long, red-tomentose as the leaf blades, especially beneath on the principal veins, becoming glabrate above, subcoriaceous, elliptic, cuneate or acute at base, acuminate, to 12 cm. long and half as wide, entire; pedicels solitary, 2–2.5 cm. long; outer bracts 22 mm. long, nearly as broad, shortly apiculate, many-nerved, the oblong-spathulate inner 18 mm. long; calyx suburceolate, reddish tomentose, 6 mm. long, the broadly ovate lobes nearly as long; flowers unknown.—Apparently with the pubescence of *B. rotundifolia* and with it allied to *B. Spruceana*. But actually it seems to be very near *B. paludosa*. Tree, 12 meters high.

Huánuco: Above Cayumba along the Río Huallaga, 830 meters, (*Mexia 8320*, type). Pampayacu, *Sawada P32*.

Blakea multiflora D. Don, Mem. Wern. Soc. 4: 326. 1823; 1088. *Topobea multiflora* (D. Don) Triana, Trans. Linn. Soc. 28: 149. 1871. *T. longipes* Naud. Ann. Sci. Nat. sér. 3. 18: 147. 1852. *B. boliviensis* (Cogn.) Kuntze, Rev. Gen. 3, pt. 2: 94. 1898. *Topobea boliviensis* Cogn. ex Kuntze. l.c.

Branchlets toward tips more or less angled; petioles to 4 cm. long; leaves oblong-elliptic, usually somewhat obovate, little narrowed to the roundish base, shortly and abruptly acuminate, 5-nerved, the nerves and the petioles slightly furfuraceous or very sparsely setulose beneath when young, to 10 cm. wide, about twice as long or even larger; pedicels fascicled, very unequal, the longer becoming 4 or 5 cm. long; bracts more or less united, somewhat shorter than the oblong-campanulate calyx, this about 1 cm. long, truncate, very minutely 5–6-denticulate.—In type of *T. longipes*, the bracts are connate only at base, 4–6 mm. long, about half shorter than the calyx; in Mathews specimen, the bracts are nearly as long

as the calyx; in type of *T. multiflora*, they are actually much shorter; in *B. boliviensis* they are free, suborbicular, shorter than calyx, this 1 cm. long. The Tessmann specimen referred in herbaria to *T. boliviensis* has calyx 9 mm. long, the outer bracts 3.5 mm. long and connate at base, the acute oblong-elliptic petals 12 mm. long; the leaves are rather gradually acuminate, but it seems to belong here; the Bolivian species was described as having longer and free bracts. Since Mathews' specimen was referred to *T. multiflora* by Cogniaux himself, the character relied upon to distinguish more than one species here seems to be variable. F.M. Negs. 17246 (*B. longipes*); 32356 (*B. multiflora*); 17245 (*B. boliviensis*).

Loreto: Shrub 3 meters high with white flowers in forest undergrowth, 700 meters, Sierra del Pongo, *Mexia 6279* (det. Gl.). Mouth of Santiago, *Tessmann* 3992 (det. in herb. as *T. boliviensis*).—Cuzco: Shrub, 3 meters, petals white with roseate points, Marcapata Valley, 1,750 meters, *Weberbauer 7846*.—Huánuco: Pampayacu, *Sawada 20*.—Without locality, *Ruiz* (type, *T. longipes*); *Pavón* (type *T. multiflora*); *Mathews 1727*. Bolivia.

Blakea ovalis (R. & P.) D. Don, Mem. Wern. Soc. 4: 325. 1823; 1078. *Valdesia ovalis* R. & P. Syst. 121. 1791; Fl. Peruv. 4: *pl. 406*. 1802.

Slightly scurfy-puberulent on young parts, soon glabrate; leaves nearly elliptic, acute at the rounded base, slenderly caudate-acuminate, shortly 3-plinerved, 10–15 cm. long, 5–8 cm. wide; petioles 1.5–2.5 cm. long; bracts longer than the calyx, the outer connate at base, acuminate, 15–18 mm. long; pedicels 5–12 mm. long.—Very doubtfully distinct from *B. rosea*. F.M. Neg. 17298.

Huánuco: Chicoplaya, *Ruiz & Pavón*, type. Valley of the Monzón, *Weberbauer 3620* (det. Cogn.); 286.—Loreto: Near Iquitos, *Klug 391* (det. Gl.). Florida, *Klug 2316; 2371; 2084*(?) (leaves narrower).

Blakea paludosa Gleason, Bull. Torrey Club 58: 261. 1931.

Young branches, petioles and pedicels densely brown tomentose as the leaves at first beneath but the tomentum there at maturity so thin and closely matted that the surface appears glabrous; petioles 12–17 mm. long; leaves rather coriaceous, oblanceolate, abruptly and shortly acuminate, cuneate or acute at base, 3-nerved, soon glabrate above, 7–10 cm. long, 3–4 cm. wide; peduncles solitary, very stout, 4 cm. long; sepals triangular-ovate, about 1 cm. long; petals pink, 3.5–4 cm. long; style 23 mm. long, lightly pubescent

below.—Related, according to the author, to *B. Spruceana*, but leaves with acumen 1 cm. long and no strigose hairs.

Junín: Edge of stagnant swamp, Eneñas, Pichis Trail, 1,700 meters, *Killip & Smith 25671*, type.

Blakea repens (R. & P.) D. Don, Mem. Wern. Soc. 4: 325. 1823; 1070. *Valdesia repens* R. & P. Syst. 121. 1798; Fl. Peruv. 4: *pl. 405*. 1802. *B. incerta* Macbr. Field Mus. Bot. 4: 179. 1929.

Younger parts slightly scurfy-puberulent, the branchlets and the leaf nerves beneath sometimes obscurely setulose, becoming glabrate; petioles 1.5–3 cm. long; leaves elliptic-oblong, subacute at base, abruptly short-acuminate, basally 3–5-nerved or very shortly plinerved, sometimes 7-nerved, the outermost pair being obscure and on the margin; pedicels 1–4 cm. long, solitary or several; bracts elliptic or nearly subrotund-obtuse, glabrous at least in age, about 15 mm. long or longer; calyx lobes broadly ovate, 4–5 mm. long; petals roseate, 1.5–2 cm. long; style about 1.5 cm. long.—*B. subconnata* Berg, 1081, from Guayaquil, with vaginate petioles seems to be scarcely distinct. F.M. Neg. 17299.

Huánuco: Chicoplaya and Chinchao, *Ruiz & Pavón*, type. Cushi, forest shrub or tree, 5–7 meters high, *4850* (type, *B. incerta*).—Cuzco: (*Gay*, fide Cogn.).—Puno: San Gabán (*Lechler 2395*, fide Cogn.).—Junín: Pichis Trail, (*Killip & Smith 25631*, det. Gl.). Bolivia(?).

Blakea rosea (R. & P.) D. Don, Mem. Wern. Soc. 4: 325. 1823; 1072. *Valdesia rosea* R. & P. Fl. Peruv. 4: *pl. 408*. 1802. *B. caudata* Triana, Trans. Linn. Soc. 28: 148. 1871. *B. calycanthus* Markgr. Notizbl. Bot. Gart. Berlin 13: 463. 1937.

Younger parts, including the outer bracts of the flowers, more or less furfuraceous-tomentose but glabrous in age or nearly; petioles 0.5–2.5 cm. long; leaves oblong-elliptic, acute or shortly cuneate at base, conspicuously and usually very abruptly long-caudate-acuminate at the rounded summit, 3-nerved or indistinctly plinerved with 2 fainter marginal nerves, generally about 1 dm. long and half as wide; pedicels solitary or sometimes 2 or 3 together, usually only 3–7 mm. long; outer bracts slightly joined a little above the base, ovate, acute or acuminate, equaling or slightly exceeding the somewhat irregularly 5- or 6-lobed calyx.—Although some of the material cited varies in the proportionate length of the outer bracts and the calyx, the variation seems unimportant; *B. calycanthus*, according to description, has free bracts, 14 mm. long, the calyx

glabrous, 8 mm. long, the petals white, 9 mm. long, the filaments and anthers 3 mm. long. F.M. Negs. 29492; 36359 (*B. caudata*).

Huánuco: Tingo Maria, *Stork & Horton 9504*.—Loreto: Florida, parasite, the flowers lilac and white, *Klug 2316; 2371* (both det. Gl., *B. caudata*). *Klug 2084* (det. Markgr., *B. calycanthus*). Iquitos, flood-free woods, *Tessmann 5357* (type, *B. calycanthus*).—Without locality: *Ruiz & Pavón*, type. Colombia.

Blakea rostrata Berg ex Triana, Trans. Linn. Soc. 28: 148. 1871; 1077.

Younger parts, including the flowers, more or less scurfy-puberulent; petioles 1–2 cm. long; leaves membranous, narrowly ovate, abruptly long-caudate, obtusish at base, only 5–7 cm. long, 2.5–4.5 cm. broad, the striate venation extremely fine; bracts all shorter than or the outer subequaling the calyx, obtuse and connate nearly to the middle, rigid, 5–8 mm. long; flowers 1–3, on pedicels 1–1.5 cm. long; petals apparently red, subacute, 7–9 mm. long.—The leaf caudation, nearly filiform and mostly 2 cm. long, is striking. F.M. Neg. 17300.

Puno: San Gabán, *Lechler 2401*, type.

Blakea rotundifolia D. Don, Mem. Wern. Soc. 4: 326. 1823; 1072.

Species unmistakable by its nearly round, merely apiculate leaves, becoming glabrous above but permanently stellate-puberulent beneath, the trichomes definitely reddish; leaves 1.5 cm. long or longer and nearly as broad, the nerves prominent; flowers fascicled, the pedicels finally 3 cm. long, rusty-scurfy as the completely free subrotund enervose bracts, these 1.5 cm. long; style only 5–6 mm. long.—The type is actually from Guayaquil, collected by Tafalla. Leaf nerves 5, with 2 fainter marginal ones. F.M. Neg. 29493.

Peru (perhaps). Ecuador. "Rayo-Caspi."

Blakea Sawadae Macbr. Field Mus. Bot. 4: 178. 1929.

Similar to *B. latifolia* and perhaps not specifically distinct; outer bracts 1–1.5 cm. long, the interior roundish ones setose-ciliate, about 1 cm. long; calyx nearly glabrous, 12–17 mm. long, regularly 6-lobed; petals white, roundish, about 1 cm. long, the broad anthers blue.—Named for Mr. Masaho Sawada, of Huánuco. Tree to 8 meters with pink flowers (K. & S.).

Huánuco: Open shrub in hillside thickets, Pampayacu, *5058*, type.—Junín: Pichis Trail (*Killip & Smith 26086*, fide Gl.).

Blakea Spruceana Cogn. in Mart. Fl. Bras. 14, pt. 4: 560. *pl. 121.* 1888; 1073.

Younger branches scurfy, the youngest also appressed setulose-pilose; leaves at first punctate-scurfy and setulose beneath on the nerves, soon glabrate, acute or attenuate at base, shortly acuminate, 4–8 cm. long, 2–3.5 cm. broad; petioles 5–15 mm. long; flowers mostly solitary on slender pedicels 2–3 cm. long; bracts all free and longer than the calyx, often whitish or pale green, 15–18 mm. long, acute; calyx lobes rounded; petals white, scarcely acute, about 2 cm. long.—The var. *villosula* Markgr. Notizbl. Bot. Gart. Berlin 9: 1146. 1927, with the peduncles and bracts villous, is nearly the typical form, the other specimens cited being less pubescent than *Spruce 4354. B. subconnata* Berg, 1081, from Ecuador, is glabrous, the petiole vaginate, the flowers often geminate and longer. F.M. Neg. 17303 (var.).

San Martín: Tarapoto, *Spruce 4354,* type. San Roque, *Williams 7383* (det. Gl.).—Loreto: Pongo de Cainarachi, *Ule 6371; 6370,* the var. Mouth of Río Santiago, *Tessmann 4036.* "Mediodia sacha."

Blakea Standleyana Macbr., spec. nov.

B. brasiliensis peraffinis; ramis junioribus sparse adpresse setuloso-pilosis, haud furfuraceis; foliis fere ellipticis, basi apiceque acutis; pedicellis 2–5 cm. longis; bracteis breviter abrupteque apiculatis; calycibus parce furfuraceo-puberulis.

Essentially *B. brasiliensis* but apparently the differences though slight are important, especially the character of the pubescence. Standley proposed a species name (in herb.) that is untenable. Climbing shrubs, the flowers rose-pink (Mexia).

Huánuco: Cayumba, 792 meters, *Mexia 8307,* type.

Blakea villosa Cogn. Bot. Jahrb. 42: 148. 1908.

Branchlets rather acutely tetragonous, thickened at the nodes; leaves elliptic-ovate, subrotund at base, shortly apiculate, glabrous above, conspicuously villous beneath, especially on the nerves and veins, the trichomes loose and crinkly, to 2 dm. long and half as broad; petioles 2–5 cm. long; bracts about 2 cm. long, twice as long as the 5–6-lobed calyx; flowers densely fasciculate on pedicels 5–15 mm. long.—A scandent shrub allied to *B. subconnata,* the broadly obovate roseate petals 2 cm. long. F.M. Neg. 17306.

Cuzco: Santa Ana, 1,700 meters, *Weberbauer 5032,* type.

45. MOURIRIA Aubl.

Usually glabrous trees, rarely large, with pinnately veined leaves, the lateral nerves often scarcely obvious. Flowers 4–5-merous, in short axillary cymes or fascicles, the pedicels bracted. Calyx usually open in the bud, the sepals dividing at anthesis or sometimes the calyx closed before anthesis, then circumcissile and often irregularly lacerate. Petals usually yellow, pointed. Stamens isomorphic, the anther cells opening by clefts, the connective glandular dorsally, deeply grooved ventrally at top of filament and posteriorly spurred or gibbous downward. Ovary inferior, (1) 2–5-celled. Seeds 1–4. The genus simulates in foliage, and often in fruit, some Myrtaceae and according to Record and Mell, Timbers Trop. Amer. 482. 1924, has an anomalous wood-structure. The fruit is sour and sometimes used as an astringent. A Bolivian species is known as "yabi," a Venezuelan as "pauja," an Ecuadorian as "piñuela prieta." Cf. the work of Cogniaux for several other species of the upper Amazon not mentioned here. The name was originally written *Mouriri*.

Flowers unaccompanied by mature leaves, borne on leafless branchlets below the young leafy branchlet tips.....*M. floribunda.*

Flowers at least in part accompanied by mature leaves, but these sometimes only at the branchlet tips.

Lateral leaf nerves more or less prominent, the leaves thus distinctly pinnately veined.

Pedicels 3–15 mm. long, bibracteolate at middle or below apex or above base, rarely also at base, rarely ebracteolate.

Connective smooth or merely gibbous; leaves shortly petioled.

Leaves abruptly and shortly acuminate; flowers fasciculate.

Calyx lobes half as long as the tube.....*M. princeps.*

Calyx lobes 3–4 times shorter than the tube.
M. grandiflora.

Leaves gradually acuminate; flowers often fasciculate-cymose.....*M. cauliflora.*

Connective spurred; leaves sessile.....*M. Sideroxylon.*

Pedicels 1–3 mm. long with 4–6 connate bracts at base.
M. Sagotiana.

Lateral nerves obscure or seemingly obsolete.

Leaves oblong-lanceolate, sessile or subsessile; flowers clustered.

Leaves several cm. broad.

Calyx closed before anthesis.....*M. Tessmannii.*

Calyx open before anthesis.....*M. cauliflora.*
Leaves small, 1–2(–3) cm. broad.....*M. parvifolia.*
Leaves elliptic, petioled; flowers solitary or binate.
M. oligantha.

Mouriria cauliflora [Mart.] DC. Prodr. 3: 7. 1828; 1122. *Petaloma cauliflora* Mart. ex DC., l.c. in syn.

Said to be a small tree about 3 (–10) meters high, the trunk 7–10 cm. in diameter, the rather slender branches spreading; leaves 1-nerved, the lateral veins indistinct, or in the Peruvian rather distinct, fleshy-coriaceous, sessile, oblong-lanceolate, basally cordate, acuminate, 12–17 cm. long, 4–5.5 cm. broad; cymes 3-flowered, geminate or fasciculate, 2–3 cm. long, the pedicels 1–1.5 cm. long, ebracteolate or minutely bibracteolate below the middle; calyx tube hemispheric, 5–6 mm. long, the lobes broadly ovate, tuberculate dorsally, 2 mm. long; petals acute, white, lanceolate-rhomboid; anthers ovate, thick, compressed; style declined, the stigma capitate-hemispheric.— *M. trunciflora* Ducke, Archiv. Jard. Bot. Rio Jan. 3: 226. 1922, Amazonian, has smaller leaves 5–7 cm. long, 3–3.5 cm. wide and the anthers of *M. grandiflora* and of *M. princeps; M. Ulei* Pilger, Verh. Bot. Ver. Brandenb. 47: 184. 1905, bears the flowers on the branches, has leaves 9–12 cm. long, only 3 cm. wide, the calyces gibbous at base, the anthers spurred. F.M. Neg. 6443.

Loreto: Mishuyacu, (*Killip & Smith 1374; 1410,* "doubtfully" Gl.); *Klug 1410; 1374.* Brazil. "Merahuba."

Mouriria floribunda Markgr. Notizbl. Bot. Gart. Berlin 9: 1147. 1927.

A tree with densely many-flowered cymes borne on the leafless branches of the preceding year; petioles 6 mm. long; young leaves thin, elliptic, narrowed at base and apex, the lateral nerves obvious but scarcely distinct, 2 cm. broad, 5 cm. long; pedicels 1 cm. long, branched and bracteolate slightly above the base; calyx glabrous, turbinate, 2 mm. high, 3 mm. across, the broad acuminate lobes indistinct; petals yellow, deciduous, ovate-acuminate, 4 mm. long, half as broad; anther spur 1 mm. long, filaments 4 mm. long; style thickened medially.—Allied to *M. guyanensis* Aubl. According to Mexia, a common tree 14 meters high with columnar trunk; hard durable wood, bright yellow flowers; the collector of the type found it 25 meters high, the trunk 56 cm. in diameter, branching at 12 meters. F.M. Neg. 17283.

Loreto: Mouth of Santiago, in flood-free wood, *Tessmann 4434*, type. Foothills of the Sierra del Pongo, *Mexia 6187* (det. Gl.). "Chontaquiro."

Mouriria grandiflora DC. Prodr. 3: 8. 1828; 1116.

Branches stout; petioles 2–5 mm. long; leaves coriaceous, oblong or ovate-oblong, often lightly emarginate at base, well acuminate, usually 2–3 dm. long and nearly half as broad; pedicels simple, 3–6 mm. long, bibracteolate at base and below the apex, the bractlets 2–2.5 mm. long; calyx minutely scurfy, the obtuse lobes 2–3 mm. long, 3–4 times shorter than the tube; petals entire, 8–10 mm. long; anthers oblong, slightly gibbous. Cf. *M. micradenia* Ducke and note under *M. princeps*. F.M. Neg. 6444.

Loreto: Mouth of Río Blanco, *Tessmann 3131* (det. Markgr.). Iquitos, *Williams 8128*. Brazil. "Charichulla," "charachuela."

Mouriria oligantha Pilger, Verh. Bot. Ver. Brandenb. 47: 184. 1905.

Branches slender; leaves coriaceous, drying pale yellow-green, opaque, elliptic, shortly caudate-acuminate, narrowed at base to the 3–4 mm. long petiole, 8–10 cm. long, about 4 (or 5.5) cm. broad, the nerves and veins scarcely obvious in mature leaves; pedicels solitary or paired, 3–7 mm. long, minutely bracteolate near the base; calyx tube cup-shaped, about 4 mm. long, open before anthesis, the broad lobes 3 mm. long, finally reflexed and emarginate; petals yellow, 8 mm. long, long-acuminate; anther connective obtusely spurred; ovary 4-celled; style 11–13 mm. long.—*M. acutiflora* Naud., 1121, of the upper Amazon, has leaves acute at base, the flowers cymose. Tree 10–20 meters high. F.M. Neg. 17287.

Loreto: Lower Río Huallaga, *Williams 3904*. Brazil.

Mouriria parvifolia Benth. Bot. Voy. Sulphur 97. *pl. 36*. 1844; 1127.

A glabrous shrub (or apparently becoming a tall tree) with sessile lanceolate leaves, rounded or emarginate at base, acutely acuminate, usually 3–4 cm. long, not obviously veined; flowers few, the pedicels to 4 mm. long, often shorter, subulately bibracteolate below the calyx, this campanulate, the tube about 3 mm. long, the acute sepals nearly as long; petals 5 mm. long; filaments filiform, finally long-exserted, the oblong anthers 2–2.5 mm. long with curved ascending spur; style 10 mm. long; fruit globose, 8 mm. thick.—An Ecuadorian specimen (*Rimbach 22802*) det. Standley, with native name "piñuela prieta,"

is from a tree 30 meters tall (!) fide the collector, the wood used in joinery.

Peru (probably). Mexico to Bolivia.

Mouriria princeps Naud. Ann. Sci. Nat. sér. 3. 18: 283. 1852; 1116.

Similar to *M. grandiflora* but the branches slender, the leaves somewhat more abruptly acuminate, the cymes 1–3-flowered and the calyx completely glabrous, its lobes after anthesis 3–5 mm. long, half as long as the tube; pedicels 5–10 mm. long, bibracteolate only at the middle; petals remotely dentate; anthers 4–5 mm. long, not spurred, scarcely gibbous.—See note, page 566.

Loreto: San Antonio, Río Itaya, *Williams 3471*. Soledad, Río Itaya, *Killip & Smith 29761*.—Río Acre: *Krukoff 5459*. Brazil to the Guianas. "Lanca caspi."

Mouriria Sagotiana Triana, Trans. Linn. Soc. 28: 155. 1871; 1117.

A small tree with ovate-oblong leaves rounded at base, abruptly acuminate, opaque only beneath, the secondary nerves prominent and connected by an arcuate submarginal vein, 5–12 cm. long, 2.5–6 cm. broad; flowers 1–3 in each fascicle on pedicels 2–3 mm. long; calyx tube broadly campanulate, about 2 mm. long, the acute lobes half as long; petals yellow, 4–5 mm. long; connective spur nearly 1 mm. long.—Well marked by the 4–6 pairs of nearly rotund, connate, imbricate bractlets (2 mm. long) on the short pedicels. F.M. Neg. 36309.

Loreto: Mishuyacu, *Klug 1501*. French Guiana.

Mouriria Sideroxylon Sagot ex Triana, Trans. Linn. Soc. 28: 155. 1871; 1123.

Branches slender, the sessile leaves lustrous above, subcoriaceous but the nerves obvious, broadly cordate at base, oblong-lanceolate, to 1.5 dm. long, 4–6 cm. broad; flowers fasciculate, the pedicels 6–9 mm. long, articulate and bibracteolate little above base; calyx 4 mm. long, the limb truncate or obscurely lobed; petals roseate, fleshy, broadly triangular, 5 mm. long; connective distinctly spurred; style 12–14 mm. long.—A tree to 14 meters high. The pedicel bractlets are early caducous. F.M. Neg. 17289.

Loreto: Iquitos, *Tessmann 3679* (det. Markgr.). Masisea, *Killip & Smith 26845*. French Guiana.

Mouriria Tessmannii Markgr. Notizbl. Bot. Gart. Berlin 9: 1147. 1927.

Tree with oblong shortly acuminate subsessile coriaceous leaves to 18 cm. long, 7 cm. broad; flowers clustered on the leafless branches and branchlets; pedicels 2 cm. long, articulate and bracteolate, minutely pubescent toward the tip with the calyx, this ellipsoid, very shortly 5-parted, irregularly breaking at anthesis, 1.5 cm. long, 1 cm. across; petals joined, triangular, 1 cm. long, 4 mm. broad at base; anthers semilunate, 6 mm. long, the filaments 1 cm. long; style 1.5 mm. thick; seeds cuneate.—The only Peruvian species with the calyx closed before anthesis. Type with trunk 27 cm. thick, the wood reddish. Section *Olisbea*. F.M. Neg. 17290.

Loreto: Mouth of Santiago, in flood-free wood, *Tessmann 4711*, type.

ONAGRACEAE. Evening Primrose Family

This family, often marked by its calyx tube extended beyond the inferior ovary, this usually 4-celled, the petals 2–4, the stamens usually twice as many, is too well known to need a more precise definition; furthermore, everyone interested in plants is familiar with its two widely cultivated representatives, *Fuchsia* and *Oenothera*, justly famous for their beauty and interest, the former notably worthy of mention here for its natural development in Peru.

Besides the following, *Clarkia* of California was reported by Bruns, Mitt. Inst. Allgem. Bot. Hamb. 8: 63. 1929, from Mollendo; it seems probable that this plant with distinctly clawed petals has been mistaken for *Godetia* which see below.

Calyx lobes persisting, the tube not produced beyond the ovary, the limb divided to it.....1. *Jussiaea.*

Calyx limb deciduous after anthesis of the flower.

Seeds with a tuft of hairs at one end; calyx tube short if developed, the flowers small, often pinkish.....2. *Epilobium.*

Seeds without a coma; calyx tube often well prolonged beyond the ovary.

Fruit a capsule; calyx tube cylindrical.

Anthers erect, attached near the base; flowers not yellow. 3. *Godetia.*

Anthers usually versatile, attached medially; flowers yellow or white.....4. *Oenothera.*

Fruit rather pulpy (baccate); calyx tube ovoid or globose below, the lobes petaloid.....5. *Fuchsia.*

1. JUSSIAEA L.

Reference: Micheli in Mart. Fl. Bras. 13, pt. 2: 147–172. 1875.

Perennials with medium-size yellow flowers pedicelled or sessile in the axils of the often long alternate leaves. Calyx tube not prolonged, the lobes persistent. Petals usually 4 (5–6). Stamens 8–12. Stigma capitate. Ovary usually 5-celled, the capsule cylindric-clavate.

The name justly honors the French family of eminent botanists and, particularly Bernard de Jussieu. The species are divisible into groups on very distinctive seed-characters but as the seeds must be mature, a vegetative key has been devised. For the Peruvian species the seed characters may be summarized as follows: Seeds uniseriate in the cells (at least below), appearing rather triangular (Munz) because more or less enclosed by corky or hard endocarp, *J. repens*, *J. natans*, *J. leptocarpa*, *J. affinis*, *J. linifolia* (in this last seeds pluriseriate above). Seeds pluriseriate, rounded or quadrate with a groove and a large raphe suggesting an empty cell, *J. suffruticosa*. Seeds pluriseriate, ellipsoid or ovate, the raphe small or only relatively prominent, *J. peruviana*, *J. nervosa*, *J. decurrens*, *J. densiflora*, *J. erecta*, *J. latifolia*.

Professor Munz has kindly supplied the following key and I acknowledge with thanks my indebtedness for his helpful criticism of my manuscript.

Key to fruiting specimens

Plants floating or creeping, small-leaved; capsules cylindric, costate.

Flowers yellow; leaves slightly if at all obovate.....*J. repens.*

Flowers white; leaves subrotund or broadly obovate....*J. natans.*

Plants not as above in all respects.

Seeds with raphe distinctly smaller than the body of the seed, the seed not enclosed in endocarp; capsule often obconic or obpyramidal.

Annual herbs with flat triangular bracteoles 0.5 mm. long; capsules oblong-linear, sessile or short-pedicelled, 4–5-angled, 2.5–4 mm. wide.

Flowers 4-merous, not crowded, in open panicles; capsule walls membranous.

Seeds multiseriate throughout the length of the capsule.

Leaves short-petioled; stems strongly angled; sepals 3–4 (6) mm. long; petals 4–5 mm. long.....*J. erecta.*

Leaves sessile; stems winged; sepals 7–10 mm. long; petals 8–12 mm. long ..... *J. decurrens.*

Seeds multiseriate in the upper part of the capsule, uniseriate below ..... *J. linifolia.*

Flowers 5-merous, crowded in spikes; capsule walls thicker. *J. densiflora.*

Perennial herbs or shrubs; bracteoles usually longer; capsules usually long-pedicelled (except in *J. latifolia*) and wider.

Flowers small; sepals 4–5 mm. long; capsule almost round. *J. latifolia.*

Flowers larger; sepals 8–18 mm. long; capsule more or less angled.

Principal lateral veins of leaf 6–12 on each side of midrib; stamens unequal; submarginal leaf vein conspicuous. *J. nervosa.*

Principal lateral veins of leaf 12–22 on each side of midrib; stamens subequal; submarginal leaf vein inconspicuous. *J. peruviana.*

Seeds with raphe almost as large as body of seed or seeds enclosed in hardened endocarp.

Flowers 4-merous; seeds multiseriate ..... *J. suffruticosa.*

Flowers 5-merous; seeds uniseriate.

Leaves lanceolate to lance-linear, 2–20 mm. wide; sepals 5–8 mm. long; disk flat ..... *J. leptocarpa.*

Leaves ovate to elliptic, 15–20 mm. wide; sepals 3.5–5 mm. wide; disk elevated ..... *J. affinis.*

Vegetative key (in part, but not requiring mature capsule)

Glabrous small-leaved creeping or floating plants; capsules cylindric, more or less costate.

Stems branching; leaves slightly if at all obovate ..... *J. repens.*

Stems simple; leaves subrotund or broadly obovate ..... *J. natans.*

Plants not as above in all respects.

Stems more or less obviously winged by the decurrent leaves. *J. decurrens.*

Stems not winged, the leaves petioled or merely sessile.

Inflorescence crowded, the sessile capsules closely appressed. *J. densiflora.*

Inflorescence open, the capsules more or less spreading.

Sepals narrowly ovate-lanceolate, often scarcely more than 1 mm. wide at base even in fruit; seeds narrowly ellipsoid (sepals 3 mm. wide, *J. latifolia*, the capsules subglobose).

Capsules subglobose, about 1 cm. thick; flowers 4-merous. *J. latifolia.*

Capsules 1–2 cm. long, 4-cornered; seeds pluriseriate in each cell; flowers 4-merous.....*J. erecta.*

Capsules 2–4 cm. long, about cylindric; seeds uniseriate in each cell at least below.

Flowers 5(4)–6-merous; seeds uniseriate.

Flowers pedicellate; disk flat.....*J. leptocarpa.*

Flowers sessile or nearly; disk elevated.....*J. affinis.*

Flowers 4-merous; seeds multiseriate above..*J. linifolia.*

Sepals broadly ovate, usually 2.5–several mm. wide at base.

Capsules cylindric or nearly; seed raphe conspicuous; leaves rather soft or thin.....*J. suffruticosa.*

Capsules obconic; seed raphe small; leaves firm.

Leaves cuneate or very acute at base, pubescent. *J. peruviana.*

Leaves rounded or obtuse at base, nearly glabrous. *J. nervosa.*

Jussiaea affinis DC. Prodr. 3: 53. 1828; 165.

Similar to *J. leptocarpa*, either pubescent or glabrate but leaves often broader, 3–10 cm. long, 1.5–4 cm. wide; petals ovate, 6 mm. long; stamens nearly equal, the style exserted from the elevated disk.—Perhaps as thought by some there is only one species. F.M. Neg. 7896. Illustrated, Micheli, l.c. *pl. 34.*

Loreto: Nanto, *Raimondi* (det. Lewin). Caballo-Cocha, *Williams 2300.* Mishuyacu near Iquitos, *Klug 336; Williams 8107* (det. Munz). Pebas, *Williams 1709* (det. Munz). Río Mazán, *Schunke 123* (det. Munz). Brazil to Trinidad and Guatemala.

Jussiaea decurrens DC. Prodr. 3: 56. 1828; 160.

Herbaceous, glabrous, often bright green, the stems more or less prominently angle-winged by the decurrent leaves, these lanceolate, lustrous, or narrower, membranous but with many prominent nerves, often about 1 dm. long, 2.5 cm. wide; pedicels 3–5 mm. long, the bractlets scale-like; petals 4, obovate, 10–12 mm. long; stamens scarcely equaling the style, the disk plane; capsule narrowly 4-angled,

constricted beneath the calyx lobes (these narrowly lanceolate, 8–10 mm. long), attenuate to base, 15 mm. long, 4 mm. wide; seeds narrowly ellipsoid, the raphe scarcely prominent, pluriseriate in each cell.—Illustrated, Micheli, l.c. *pl. 31.*

Loreto: Río Itaya, *Williams 182.* Mishuyacu near Iquitos, *Klug 948.* Yurimaguas, *Raimondi* (det. Lewin). To Mexico and southeastern United States.

Jussiaea densiflora Micheli, Flora 57: 300. 1874; 161.

Glabrous herb related to *J. decurrens* and *J. erecta* but with crowded lanceolate petioled leaves, these about 5 cm. long, 10–12 mm. wide, and small sessile 5–6-merous flowers, solitary or 4–6 crowded together on short axillary branchlets; calyx lobes 3–4 mm. long, equaling the tube; petals narrowly ovate, about as long as the calyx lobes; stamens unequal; style extended above the plane disk; capsule obscurely 5-angled, strongly 10-costate, the seeds scarcely 0.5 mm. long, smooth or obscurely punctate.—Illustrated, Micheli, l.c. *pl. 32.*

Cajamarca: Nanto, *Raimondi* (det. Lewin). Amazonian Brazil.

Jussiaea erecta L. Sp. Pl. 388. 1753; 160.

Allied to *J. decurrens* but the stems merely somewhat angled by the obscurely decurrent petioles; leaves narrowed both ends, sometimes nearly linear; flowers often 5-merous, sessile or subsessile, the calyx lobes 4–5 mm. long, the petals little longer; style scarcely 1 mm. long.—Plants often purplish-red, the stems or branches slender,

Piura: Pariñas Valley, *Haught 82; 171.*—Loreto: Leticia, *Williams 3053.* Nanta, *Raimondi* (det. Lewin). Caballo-Cocha, *Williams 2296.* South America to Florida; also in Africa and Madagascar.

Jussiaea latifolia Benth. in Hook. Journ. Bot. 2: 317. 1840; 153.

Glabrous except the puberulent inflorescence, little branched, strongly angled above; leaves ovate, acuminate, thin, about 1 dm. long, 3.5–4.5 cm. wide; petioles 7–8 mm. long; calyx tube 5 mm. long, 3–4 mm. broad, bibracteolate above the base, the bractlets lanceolate, acute, 5 mm. long, the lobes at least as long and equaled by the suborbicular petals, these even to 8 mm. wide; disk elevated, the style short, the stigma capitate; capsule subglobose, 11–12 mm. long, to 8 mm. thick, glabrate; seeds narrowly oblong, costate, striate, rostrate, obtuse at base, the raphe prominent, 0.75 mm. long. —Description after Micheli. More or less woody especially below, or even tree-like. F.M. Neg. 13945.

Loreto: Yurimaguas, *Poeppig 2298* (det. Micheli); *Killip & Smith 28201; 29028.* Iquitos, *Killip & Smith 26901; Klug 1084.* Río Mazán, *Schunke 175.* Caballo-Cocha, *Williams 2128; 2241.* Lower Río Nanay, *Williams 315.*—San Martín: San Roque, *Williams 7468; 7553.* To Colombia and British Guiana.

Jussiaea leptocarpa Nutt. Gen. N. Amer. Pl. 1: 279. 1818; 164. *J. pilosa* HBK. Nov. Gen. & Sp. 6: 101. *pl. 532.* 1823.

Often amply branched, tall and somewhat shrubby, pubescent or glabrous; leaves lanceolate, narrowed toward the subsessile base, those of the stem about 1 dm. long, 2 cm. wide; pedicels 4–6 (–10) mm. long; flowers usually 5-merous, the petals rounded, about 5 mm. long or as long as the ovate-lanceolate acuminate calyx lobes; stamens unequal; capsule nearly cylindric, 2.5–4 cm. long, the seeds less than 1 mm. long, laterally enclosed by the corky endocarp, this horseshoe-shaped. F.M. Neg. 38401.

Ayacucho: Huanta, *Raimondi* (det. Lewin).—Loreto: Masisea, *Tessmann 3113.* Pebas, *Williams 1709.* La Victoria, *Williams 2586* (det. Munz). Tropical and temperate America; tropical Africa; Madagascar.

Jussiaea linifolia Vahl, Eclog. Amer. 2: 32. 1798; 162.

Glabrous herb similar to *J. leptocarpa* but the leaves with petioles to 10 mm. long, the 4-merous flowers sessile, the calyx lobes and white petals only 2–3 mm. long; capsule to 2.5 cm. long, 2 mm. thick, the seeds multiseriate in the upper part of the cells, uniseriate below.—F.M. Neg. 23013. Illustrated, Micheli, l.c. *pl. 33.*

Loreto: Río Nanay, *Williams 274.* Río Itaya, *Williams 181.* Pró, *Williams 1981.* Near Iquitos, *Klug 1233; Williams 7967.* Nearly all tropical lands. "Yerba de chacra."

Jussiaea natans Humb. & Bonpl. Pl. Aequin. 1: 16. *pl. 3.* 1805; 168.

Like *J. repens* but apparently always aquatic, simple, the leaves rounded-obovate, the stems at the axils below provided with nodose vesicles several cm. long; capsule strongly costate.—*J. sedoides* Humb. & Bonpl. of Brazil has small leaves crowded toward end of stem and an obconic capsule.

Lima: *Dombey; Soukup 1046.*—Loreto: Caballo-Cocha, *Williams 2444.* Near Iquitos, *Williams 8222.* Playas del Ucayali (*Raimondi 7*, det. Munz). Puerto de Sarayaco (*Raimondi 573; 12844*, det. Munz). Ucayali River, *Tessmann 3275* (det. Munz). Colombia; Bolivia; Brazil.

Jussiaea nervosa Poir. Encycl. Suppl. 3: 199. 1813; 155.

Shrub with large flowers allied to *J. peruviana* but the styles shortly produced above the elevated disk and the stamens unequal; leaves sessile, coriaceous, strongly veined; pedicels to 1 cm. long, narrowly bracteolate above; calyx lobes ovate, 8–10 mm. long, longer than the pubescent calyx tube, the obovate petals 10–13 mm. long; longer stamens 7 mm. long, the shorter 5; capsule obconic, somewhat 4-cornered and 8-costate, the alternate costae finer, 12 mm. long, half as thick; seeds lustrous, little striate, the raphe prominent. —Plants glabrous or hairy. F.M. Negs. 7894; 38424. Illustrated, Micheli, l.c. *pl. 30.*

San Martín: San Roque, *Williams 7289; 7305.*—Amazonas: Moyobamba, *Stuebel 63c.* To Guiana and Colombia. "Carnaval Sisa."

Jussiaea peruviana L. Sp. Pl. 388. 1753; 151.

Vigorous, hirsute to glabrate, erect, suffrutescent, strict or branching and often a meter tall or taller; leaves oblong-lanceolate, narrowed to both ends, the petioles short or to about 4 mm. long; pedicels at least 1 cm. long, the bractlets often 10 mm. long or longer; calyx lobes ovate to broadly so, 9–12 mm. long or longer in fruit, the emarginate shortly clawed petals about twice as long; stamens 6 mm. long, equaling the style, the disk raised; capsule obconic, 2–2.5 cm. or shorter, 7–8 mm. thick.—Along streams, especially loma zone, and lower valleys.—Several collectors besides those listed have obtained the species near Lima, where it is not uncommon. Illustrated, HBK. Nov. Gen. & Sp. 6: *pl. 533* as *J. macrocarpa* HBK.

Lima: Chosica, *501.* San Lorenzo Island, *Andersson;* (Weberbauer, 149). Abundant on wet ground, Callao to Yanga (*Wilkes Exped.*).—Cajamarca: Ocros, *Weberbauer 2641.* West of Socato, 2,800 meters, *Stork & Horton.*—Amazonas: Chachapoyas, *Mathews.* —San Martín: near Moyobamba, *Klug 3392.*—Junín: Chanchamayo Valley, 1,500 meters, *Schunke 269; 268;* 700 meters, *Killip & Smith 23689.*—Apurímac: East of Abancay, *Vargas et al. 10550; Vargas 435.*—Cuzco: *Gay.* Marcapata, 2,300 meters, *Vargas 9700.* Quillabamba, *Soukup 146.*—Puno: San Gabán, *Lechler 2462.*—Loreto: Mouth of Santiago, *Tessmann 4488.* Tropical America to Florida.

Jussiaea repens L. Sp. Pl. 388. 1753; 166. *J. patibilcensis* HBK. Nov. Gen. & Sp. 6: 97. 1823(?).

Altogether distinctive by habit, the branching stems creeping on the muddy shores of rivers or lakes, rooting at the nodes; leaves variable, narrow to obovate, petioled; flowers showy on elongate

pedicels; capsule cylindric, more or less woody, costate; seeds joined to the enclosing hard endocarp.—The glabrate Peruvian form is var. *peploides* HBK. ex Griseb., fide Munz. The HBK. species is included in the loma flora by Bruns, Mitteil. Inst. Allgem. Bot. Hamb. 8: 63. 1929, who, however, cites only the type locality, Patibilca; Micheli includes it in his var. *minor*, the small-leaved state. Illustrated, Martins, Mém. Genre Juss. *pl. 1, 2, 4.*

Lima: *Soukup 1046.*—Loreto: On wet sandy beach, Pongo de Manseriche, *Mexia 6341* (det. Munz). Colombia to Brazil; Uruguay; Chile.

Jussiaea suffruticosa L. Sp. Pl. 388. 1753; 169. *J. octonervia* Lam. Encycl. 3: 332. 1789; Illustr. *pl. 280.* 1797. *J. macropoda* Presl, Rel. Haenk. 2: 35. 1831.

Tall, villous-pubescent to glabrous herb with lanceolate to ovate leaves and large flowers, the petals well-exceeding to twice exceeding the calyx lobes, these 5–12 mm. long; capsules cylindric; seeds as described above, the species as indicated by Urban well marked by this (seed) character and not divisible on the vegetative variations which are many: one is var. *ligustrifolia* HBK. ex Griseb., glabrate, the leaves lance-linear; another, var. **macropoda** (Presl) Munz, in herb., pedicels well developed, merging with the narrowly obconic capsule. Raimondi collected it at Nancho, Cajamarca, Ancash, Libertad, Lima, Arequipa, all det. Lewin.—Illustrated, Micheli, l.c. *pl. 35.*

Lima: *Lesson; Gaudichaud.* Lima and Callao (*Wilkes Exped.*).—Huánuco: *Ruiz & Pavón; Sawada P 117.*—Loreto: Río Ucayali, *Castelnau.*—Puno: San Gabán, *Lechler 2412.*—Tacna: *Shepard 279.* Arica, *Skottsberg 1456.*

The following are var. *macropoda* fide Munz except as indicated:

Lima: Island San Lorenzo, *Andersson;* (Haenke, type, *J. macropoda*).—Piura: Pariñas Valley, *Haught 123a.* Negritos, *Haught 1.* Talara, *Haught 66.*—San Martín: San Roque, *Williams 7280* (var. *ligustrifolia*).—Huánuco: River bottom, *3233.*—Loreto: Lower Río Nanay, *Williams 316* (var. *ligustrifolia*).—Junín: La Merced, *Killip & Smith 23493* (var. ined., fide Munz). Cosmopolitan in warm regions. "Yerba de claro."

2. EPILOBIUM L.

Reference: Haussknecht, Monogr. 1884.

Herbs variable in duration, sometimes even fruticose, with alternate or opposite leaves, these entire or denticulate but always sessile

or nearly so. Flowers axillary above or racemose, the calyx tube slightly extended beyond the ovary. Floral parts in 4's, the stamens of two lengths. Hairs at the tip of the seeds silky and tufted.—For the key and new descriptions I am indebted to Samuelsson for a discriminating study in Sv. Bot. Tidskr. 17: 241–295. 1923; 24: 1–11. 1930. Following him *E. Bonplandianum* HBK., Nov. Gen. & Sp. 6: 95. 1823, and *E. repens* Schlecht., Linnaea 12: 267. 1838, are omitted from the Peruvian flora; *Mathews 869* referred by Haussknecht to the former, not seen by me, in all probability from a standpoint of range is referable to one of the following species; likewise *E. repens*, found as near as northern Bolivia according to the monographer, is no doubt *E. denticulatum* or one of its segregates.

There is further a specimen collected between Baños and Culnai, dept. of Lima, on the Wilkes Expedition which I have not seen and which Gray, U. S. Expl. Exped. Bot. 1: 621. 1854, referred to *E. tetragonum* L., a reference evidently overlooked by Samuelsson as he does not mention it. Gray notes that it is nearly *E. Bonplandianum* (cf. reference above) and calls attention to Hooker's remarks ten years earlier in Fl. Ant. 2: 270 "for an enlarged view of the varying forms and world-wide distribution of this species," a viewpoint not followed by Haussknecht. It sometimes seems that modern erudition as applied to plant taxonomy when expressed in terms of over-precision that results in too fine and impractical segregation conceals rather than aids in clarifying the problems of plant distribution.

Leaves small, about 1 cm. long; low alpine plants rarely more than a few cm. high.

Flowers 5 mm. long; calyx lobes ovate-lanceolate..... *E. nivale.*

Flowers 7–8 mm. long; calyx lobes linear..... *E. fragile.*

Leaves mostly much longer; plants usually much taller, characterized by the more or less developed offshoots from the base (Group *Denticulatae* Sam.).

Stem pubescence, at least above the middle, not restricted to lines.

Pubescence, including that of the capsules, appressed or subappressed..... *E. denticulatum.*

Pubescence of the leaves above and of the capsules spreading-hirsutulous..... *E. hirtum.*

Stem-pubescence restricted to lines.

Immature capsules more or less ashy-puberulent. *E. bolivianum.*

Immature capsules sparsely puberulent..... *E. Haenkeanum.*

Epilobium bolivianum Sam. Sv. Bot. Tidskr. 17: 263. 1923.

Plants to about 2 dm. tall, the rooting stolons even as long, the leaves of the offshoots often only 5–8 mm. long and subentire; stems ascending-erect, somewhat nodding before anthesis, from base and middle part with long flowering branches, nearly glabrous below, above sparsely and crisply pubescent in lines; leaves gray-green, glabrous, shorter than the internodes, broadly ovate, rounded at base, obtusish, 1.5–2.5 cm. long, 1–1.5 cm. wide, densely and most minutely denticulate, the nerves obsolete; flowers many, 8–9 mm. long, the roseate petals about half as long as the narrow calyx lobes; stigma clavate, 2 mm. long, 1.25 mm. wide, the style about as long; capsules subcanescent when young, glabrate at maturity, 5–6 cm. long; pedicels 2–3.5 cm. long; seeds rather long-appendaged, about 1.25 mm. long.—Distinctive in thick, finely toothed leaves and long pedicels. *E. equinoctiale* Sam., 259, Ecuadorian, has leaves cuneate at base, little dentate; *E. diminutum* Sam., 264, Bolivian, is smaller, the subentire leaves 10–13 mm. long, the upper much longer than the internodes, and resembles also *E. nivale*, but flowers 7 mm. long, and is more pubescent (Samuelsson). F.M. Neg. 13984. Illustrated, Sam. l.c. *pl. 2*.

Peru (probably, as well as the related forms noted). Bolivia.

Epilobium denticulatum R. & P. Fl. Peruv. 3: 78. *pl. 314*. 1802; 264. *E. andicolum* Hausskn. Oesterr. Bot. Zeitschr. 29: 118. 1879. *E. Asplundii* Sam. Sv. Bot. Tidskr. 17: 256. 1923.

Plants erect with many branchlets from base to apex and spreading, rooting, arcuate-ascending branches as well as stolons; stems becoming woody below, 2–3 or many dm. high, often purplish, sparsely appressed-puberulent, the lines decurrent from the petioles little elevated, nodding at apex before anthesis; leaves a sordid green, scarcely puberulent, the secondary nerves obscure, the lower opposite, entire or obsoletely denticulate, the middle and upper lightly decurrent to the petioles, obtusely and remotely denticulate, often mucronulate, elliptic-lanceolate, manifestly, if gradually, cuneate, 2–2.5 cm. long, 3–8 mm. wide; flowers 5–6 mm. long, the rose-colored petals somewhat longer than the ovate-lanceolate calyx lobes; stigma clavate, 1.5–2 mm. long, about half as broad, gradually attenuate to style scarcely 2 mm. long; mature capsules sparsely puberulent, 4–5 cm. long, the pedicels about 1 cm. long; seeds attenuate to each end, pellucid-appendiculate, papillose, 1.25 mm. long.—The original description was based on more than one species; that here is taken from Hausskn. *E. meridense* Hausskn., 266, very

near but even the young capsules sparsely puberulent, to which the author referred a specimen by Ruiz & Pavón from Tarma, is, at least as to this plant, included here. Samuelsson has designated a var. *confertum* Sam., l.c. 252, with crowded leaves and flowers, the primary stems with short sterile branchlets or with ascending flowering branches from the base; var. *macropetalum* Sam., 253, the flowers 9–10 mm. long. To this var. he himself, l.c. 254, reduced *E. andicolum* and *E. Asplundii*. The original plate by Ruiz & Pavón is doubtful according to Samuelsson. According to Herrera, the plant is employed in native medicine. Most of the collections cited were determined or verified by Samuelsson; many other collections have been made. F.M. Neg. 13986. Illustrated, Léveillé, Ic. Epilob. *pl. 211*.

Ancash: Above Huaraz, *Weberbauer 3254*.—Amazonas: Chachapoyas, (*Mathews*). Valle de Xanja, (*Mathews*, fide Hausskn.).—Lima: Río Blanco, 3,600 meters, *677*.—Junín: Tarma, *Ruiz & Pavón*.—Huánuco: Tambo de Vaca, 3,900 meters, *4373*. Casapalca, 4,650 meters, *857*. La Quinua, 3,600 meters, *2023*.—Huancavalica: North of Pampas, 3,250 meters, *Stork & Horton 10236* (var.).—Ayacucho: Hacienda Totorabamba, 3,500 meters, *Weberbauer 5491* (var. *confertum*).—Huancayo: *Rospigliosi*.—Arequipa: Chachani, 2,400 meters, (*Hinckley 65*, var.). Near Arequipa, (*Rose 19013*, var.).—Cuzco: Isla del Sol, Lake Titicaca, Bolivian side, *Asplund 3708* (type, *E. Asplundii*); *3709*, var. Chican Canyon, Urubamba, *Vargas 11054*, var.; also, the species, *11014* in water holes, prov. Canas. Yucay, *Soukup 734*, var. Near Urubamba, (*Hill 155*, var.). Valle del Paucartambo, (*Herrera 1026*). Ollantaytambo, (*Cook & Gilbert 269; 635*, var.). Cerro de Cusilluyoc, *Pennell 141567*. La Raya, *Pennell 13514*.—Moquehua: Carumas, *Weberbauer 7337*. Prov. Huanta, 3,300 meters, *Weberbauer 7505*, var.—Puno: Cuyocuyo, *Weberbauer 857*, var.; 184. Sicuani (*Hicken*).—Tacna: *Meyen*, var. Ecuador to Chile and Argentina. "Huailla-cajatilla," "duraznillo," "huailla-vahuar-chchuncca."

Epilobium fragile Sam. Sv. Bot. Tidskr. 17: 291. 1923.

Similar to *E. nivale* but the extremely fragile stems not entirely smooth, especially the young capsules glanduliferous; petals white, 7–8 mm. long; leaves oblong-elliptic, obtuse, 10–14 mm. long, 4–7 mm. wide; calyx lobes linear, the sides nearly parallel, the apex rounded, glabrous, the tube sparsely glanduliferous.—Illustrated, Samuelsson, l.c. *pl. 4*. F.M. Neg. 13987.

Junín: In slide rock, 4,650 meters, Casapalca, *867* (det. Sam.). Bolivia.

Epilobium Haenkeanum Hausskn. Oesterr. Bot. Zeitschr. 29: 148. 1879; 268. *E. peruvianum* Hausskn. Monogr. 263. 1884, fide Samuelsson.

Stems many, subligneous below, about 3 dm. high, sparsely puberulent only above and with sterile arcuate-ascending branches from the base; leaves glabrous, the midnerve and secondary nerves prominent, irregularly repand-denticulate, to 4 cm. long, 1 cm. wide, the lower and intermediate obtuse, the younger puberulent at the margins; flowers erect, small, 6 mm. long, the pale petals longer than the calyx; capsules glabrous, purplish, about 4 cm. long, the younger scarcely puberulent; pedicels about 5 mm. long; seeds oblong, not appendiculate, minute, finely papillose.—The sharp, often double toothing of the smooth leaves, the congested inflorescence and the small seeds are diagnostic (Samuelsson). The Ecuadorian *E. assurgens* Sam., 261, with *Veronica* habit, has sessile, broader based, faintly toothed leaves. F.M. Neg. 38369. Illustrated (as *E. peruvianum*), Léveillé, Ic. Epilob. *pl. 110.*

Ancash: Ocros at 3,400 meters, *Weberbauer 2706* (det. Krause); 171.—Huánuco(?): (*Haenke*).—Lima: Huará (*Ruiz & Pavón*). Matucana, *90* (det. Sam.).—Arequipa: (*W. E. Castle 5*, det. Sam.). Bolivia.

Epilobium hirtum Sam. Sv. Bot. Tidskr. 17: 266. 1923.

Stout, thickly leafed plants of the general port of *E. denticulatum* but above the base the stems densely hirsutulous with spreading trichomes of uneven length and often glandular; leaves more or less densely soft-puberulent, ovate-elliptic, 1.25–3.25 cm. long, to 13 mm. wide, remotely and minutely denticulate, the secondary nerves obscure; flowers 6–12 mm. long, the pale rose petals acutely emarginate, twice as long as the villous linear-lanceolate calyx lobes; stigma capitate, emarginate at tip, about 1.5 mm. long and broad, the style 7 mm. long; capsules, especially the younger, spreading white-villous, 4–4.5 cm. long; seeds fusiform pellucid-appendiculate, 1.25 mm. long, papillose.—The type from northern Bolivia, it may be found in Peru. Illustrated, Sam. l.c. *pl. 2.* F.M. Neg. 13989.

Peru (probably). Bolivia.

Epilobium nivale Meyen, Reise um die Erde 1: 315. 1834; 251.

Small and low, abundantly stoloniferous plants, glabrous or essentially even to the capsules, the leaves on the offshoots remote; stems

5–10 cm. long, usually decumbent at base, the fleshy leaves mostly not longer than 10 mm., 2–3 mm. wide, oblong, cuneate at base, entire or nearly; flowers erect, 5 mm. long, the roseate petals about twice longer than the ovate-lanceolate acute calyx lobes; capsules 1–2 cm. long, the pedicels 5–10 mm. long; seeds papillose, often pointed and with pellucid appendage (Samuelsson), but acc. to Hausskn. this lacking, the seeds rounded.—F.M. Neg. 13993.

Ancash: Above Huaraz at 4,600 meters, *Weberbauer 2969;* 225.—Junín: Casa Cancha, etc. (*Wilkes Exped.*). To Patagonia.

3. GODETIA Spach

Erect annuals with linear or narrowly obovate leaves, the pretty flowers, at least in the Peruvian species, in the axils of the upper reduced ones. Calyx tube nearly lacking or funnel-form and with a ring of trichomes within, the lobes reflexed in anthesis, distinct or more or less united. Petals sessile or claw short. Stamens in 2 series. Stigma lobes short. Seeds fimbriate on the upper margin.

Named for C. H. Godet, author of a flora of the botanically rich Jura, the mountains on the Swiss–French boundary.

Calyx tube obsolete; pods to 1 cm. long.....*G. tenella.*
Calyx tube conical; pods 2–3 cm. long.....*G. tenuifolia.*

Godetia tenella (Cav.) Spach ex Steud. Nomencl. ed. 2. 1: 697. 1840. *Oenothera tenella* Cav. Icon. 4: 66. *pl. 396.* 1797.

Strict, 1.5–3 dm. high, the younger parts and capsules somewhat ashy strigose-puberulent, the buds and stem tips more or less nodding or suberect; leaves entire or nearly, oblong or oblong-lanceolate, 1.5–2 cm. long, 2–4 (–5) mm. wide; calyx tube very short, 2 of the oblong-lanceolate lobes united at anthesis, 6–10 mm. long; petals 12–15 mm. long or often only half as long; shorter anthers subsessile, the longer on filaments less than twice as long; pods quadrate, 1 cm. long, 2–2.5 mm. wide, slightly attenuate to the obtuse tip.—The name transfer was made by Steudel for Spach only by inference.—F.M. Neg. 13942. Illustrated, Sweet, Brit. Fl. Gard. 2: *pl. 167.*

Lima: Matucana, *Weberbauer 180* (det. Krause); *Savatier 399.*—Tacna: *Woitschach* (det. Krause). Chile; North America.

Godetia tenuifolia (Cav.) Spach, Nouv. Ann. Mus. Paris 4: 390. 1835. *Oenothera tenuifolia* Cav. Icon. 4: 67. *pl. 397.* 1797.

Similar in habit and pubescence to *G. tenella* but often taller and leaves usually longer, even to 4 cm. long but only 2–4 mm. wide;

calyx tube 6–8 mm. long, the narrow lobes only 10 mm. long; petals about 2 cm. long, erose margined; longer stamens nearly as long as the calyx, the filaments of the shorter about half as long as the anthers; pods 2–3 cm. long, 4 mm. thick.—F.M. Neg. 38379.

Tacna: *Woitschach* (det. Krause).—Arequipa: Mollendo and Cachendo, (*Günther & Buchtien 2032; 2031*, det. Bruns as *Clarkia elegans*, probably rather this or *G. tenella*). Chile.

4. OENOTHERA L.

Reference: Munz, Amer. Journ. Bot. 19: 755–768. 1932 and 22: 645–663. 1935.

This famous group in its natural sense includes species with calyx tube prolonged, stamens 8, the anthers attached near the middle and usually versatile, the stigma 4-lobed, discoid or capitate, the petals 4 and yellow (or white), the fruit a 4-celled dehiscent capsule, straight to curved or coiled.—I acknowledge with thanks my indebtedness to the authoritative studies by Munz from which I have freely compiled.

O. perampla R. Grah. Edinb. N. Phil. Journ. 362. 1832, described from cultivated plants, the seeds sent by Cruckshanks as from Lima, seems undoubtedly from description, as suggested by Munz & Johnston, to be *O. acaulis* Cav. of Chile and the Peruvian origin is therefore an error. *O. fusiformis* Munz & Johnst. Contr. Gray Herb. 75: 21, so far known only from Ecuador, is related to *O. campylocalyx* (which see below) but the petals are 4–5 cm. long, the capsules fusiform, 3–4 cm. long, evidently narrowed to base and not noticeably enclosed by the leaf base as in the other species. The following key is adapted from the synopsis of the Oenotheras of northern South America by Munz & Johnston, Contr. Gray Herb. 75: 15–23. 1925.

Capsules spindle-like or clavate, broadest above the middle and more or less thick-angled.

Petals roseate or more purplish; capsules straight. . . . . *O. rosea.*

Petals yellow or greenish; capsules usually curved. . . *O. multicaulis.*

Capsules cylindric or broadest below the middle.

Capsules obscurely if at all angled, the seeds not at all.

Cespitose plants, the flowers crowded in the tufted leaves. *O. nana.*

Caulescent plants, the leaves and axillary flowers relatively remote.

Ligneous-based perennial; petals 2.5–3.5 cm. long, the style pubescent at base ..... *O. Featherstonei.*

Herbaceous, the plants annual or short-lived; petals rarely longer than 2 cm. or then the style glabrous.

Stigma 4-lobed; capsules at least 2 mm. thick.

Petals 0.5–3.5 cm. long; plants freely branching from the base, floriferous above; capsules not narrowed at each end ..... *O. laciniata.*

Petals 4–7 mm. long; capsules narrowed at each end; plants often erect or even simple ..... *O. verrucosa.*

Stigma capitate; capsules scarcely 1 mm. thick .. *O. dentata.*

Capsules sharply angled as evidently also the seeds.

Petals 5–10 mm. long; capsules 4 times as long as thick. *O. rubida.*

Petals 12–25 mm. long.

Hypanthium 5–9 cm. long; capsules 4–6 times longer than thick; flowers yellow, at least when fresh .... *O. elongata.*

Hypanthium 1–3 (–6) cm. long; capsules thicker; fresh flowers reddish or yellow ..... *O. campylocalyx.*

Oenothera campylocalyx Koch & Bouché, Ind. Sem. Hort. Berol. App. 17. 1855. *Onagra fusca* Krause, Repert. Nov. Sp. 1: 167. 1905, fide Munz & Johnst. as also *Oe. Weberbaueri* Krause, l.c. 169. *Oe. fusca* (Krause) Sprague & Riley, Kew Bull. 199. 1921.

Herbaceous biennial or perhaps sometimes a short-lived perennial because the simple or somewhat branched stems are apparently slightly woody toward the base, 2–several dm. high, more or less pilose-puberulent, the capsules even villous or hirsute; leaves except the lowest sessile, lanceolate, entire or remotely denticulate, 3.5–8 cm. long, 5–20 mm. wide; petals to about 2.5 cm. long, often shorter; calyx tube usually 1 cm. long, about equaled by the lobes; filaments filiform or dilated toward the base; capsule ovate-cylindrical or conical, 1–2 cm. long, 4–5 mm. thick, the seeds angled.—*O. fusca* has the inflorescence rusty-villous. F.M. Negs. 13996 (*fusca*); 14016 (*Weberbaueri*). Illustrated, Léveillé, Monogr. Gen. Onothera 360. 1909, as *O. Simsiana* (typical, fide Munz & Johnst.).

Ancash: Near Pampa Romas, grass-shrub formation, 3,200 meters, *Weberbauer 3211* (type, *O. fusca*). Río Blanco, 3,600 meters, *681; 721* (det. M. & J.).—Lima: Chicla, 3,720 meters, *Weberbauer 237* (type, *O. Weberbaueri*).—Huánuco: Yanahuanca, *1250* (det.

M. & J.). Huacachi near Muña, 1,950 meters, *3884* (det. M. & J.).—Cuzco: Ollantaytambo, 3,000 meters (*Cook & Gilbert 628; 294*). Cuzco, *Soukup 481; Herrera 3359.* Valle de San Miguel, *Herrera 1989.* Valle del Paucartambo, 3,450 meters, *Herrera 1090.* "Hua-illa yahur-chchuncca," "alto-yahuar-chchuncca."

Oenothera dentata Cav. Icon. 4: 67. *pl. 398.* 1797.

Diminutive to bushy annual, glabrate or strigillose, often sprawling, the papery bark of the stems exfoliating, 5–20 cm. high; leaves linear, obscurely and sparsely denticulate, 1–3 cm. long; flowers sessile, axillary, the petals 5 mm. long or longer; capsules linear, terete, often torulose and somewhat contorted or merely curved, 2 cm. long, 1 mm. thick.—The flowers of the Peruvian specimen are scarcely 3 mm. long, so the collection may rather be referable to the very similar species(?) *O. contorta* Dougl.; cf. Munz, Bot. Gaz. 85: 251, 257. 1928. The plant belongs to the subgenus *Sphaerostigma.*

Arequipa: Open gravelly soil, 3,750 meters, Pampa de Arrieros, *Pennell 13327* (det. Johnst.).

Oenothera elongata Rusby, Mem. Torrey Club 3, pt. 3: 33. 1893. *O. serratifolia* Krause, Repert. Nov. Sp. 1: 168. 1905, fide Munz & Johnst. *O. sandiana* Hassk. Flora 39: 516. 1856(?).

Similar to *O. rubida;* leaves 4–9 cm. long, 5–15 mm. wide or wider, distinctly denticulate or serrate, the nerves often prominent; hypanthium 5–9 cm. long, the narrow lobes to 3 cm. long; petals yellow drying purplish, nearly 2 cm. long; capsule 2–2.5 cm. long, oblong-cylindrical, about 6 mm. thick, densely hirsute-pilose.—Munz & Johnst. did not see the type of *O. serratifolia.* They suggest that *O. sandiana* may rather be referable to *O. campylocalyx;* the original description is in no way diagnostic; the author states that he found the plant at Sandía. F.M. Neg. 14012 (*serratifolia*).

Puno: Sandía, *Weberbauer 677* (det. Markgr.). Bolivia.

Oenothera Featherstonei Munz & Johnst. Contr. Gray Herb. 75: 19. 1925; 654.

Perennial with prostrate-ascending ligneous stems 2–3 dm. high, minutely canescent toward the tips; leaves many, 1–5 cm. long, 3–10 mm. wide, lanceolate, puberulent, remotely dentate, acute, attenuate to petiole, 1–4 mm. long, the upper little reduced; hypanthium 2.5–3.5 cm. long, minutely ashy-puberulent as the sepals, these 1.5–3.5 mm. long and with cusps 2–4 mm. long; petals 2.5 cm. long or nearly to 3.5 cm. long, and about as wide at the truncate tip; filaments to 20 mm.

long, the anthers about half as long; style densely pubescent below; stigma lobes 2–4 mm. long; capsules sessile, 20–25 mm. long, obtuse, quadrangular, straight or falcate, little thickened above the middle, about 3.5 mm. thick; seeds 1.5 mm. long, brown, ellipsoid, not at all angled.—Very near to *O. laciniata* and apparently represents a large-flowered offshoot from that species; no intergrades so far seen (Munz).

It is named for my companion on my first trip to Peru, William Featherstone, who, though not a botanist, shared effectively the work of collecting.

Lima: Sprawling on disintegrated granite slope, Matucana, *270*, type. Between Turco & Matucana, *Weberbauer 5217* (det. Munz). Purruchuca, (*Mathews*, det. Munz). Between Tarma and Matucana, *Raimondi* (det. Munz).

Oenothera laciniata Hill, Hort. Kew. 172. *pl. 6*. 1769; 654. *O. prostrata* R. & P. Fl. Peruv. 3: 79. *pl. 315*. 1802. *O. albicans* Lam. Encycl. 4: 552. *pl. 279*. 1797 is var. *limensis*, fide Munz. *O. stricta* Ledeb., as to Peru.

More or less enduring and variable in habit and pubescence but often decumbent, 2–3 dm. high and usually ashy-strigose, the leaves sometimes villous; leaves mostly oblanceolate, 2–6 cm. long, 0.5–1.5 cm. wide or larger, the lower petioled, the upper not bract-like, regularly sinuate to dentate; calyx tube 1.5–5 cm. long, the lance-linear lobes 0.5–3 cm. long, their free tips 0.5–5 mm. long; petals yellow to whitish, drying red, 0.5–3.5 cm. long; style glabrous, the stigma lobes 2–6 mm. long; capsule usually sessile and somewhat arcuate, divaricate, 1–3.5 cm. long, 2–3 mm. thick, seeds about 1 mm. long, brownish, evenly and regularly pitted.—The Peruvian form is var. *limensis* Munz & Johnst. (var. *nocturna* (Jacq.) Munz), ashy-puberulent, the leaves shallowly sinuate, the calyx with prominent cusps 2–3 mm. long, the petals only 7–9 mm. long. It may be remarked that inasmuch as there was already a varietal name for this plant, there was no reason for transferring the cognomen of Jacquin to the same status. The var. *pubescens* (Willd.) Munz has been found as near as Ecuador; it is somewhat villous, the leaves more sinuate-pinnatifid, the calyx lobes scarcely if at all cusped or free, the petals 5–15 mm. long.

Here probably belongs *O. stricta* Ledeb., Chilean species fide Munz, l.c. 22: 661, as to Peruvian specimens cited by Bruns, Mitt. Inst. Allgem. Bot. Hamb. 8: 63. 1929; *O. stricta*, fide Munz, differs

in having the capsule enlarged in the upper half, and is usually taller than *O. laciniata.*

Lima: Rimac Valley, (*Ball*). Region of Chancay, *Dombey; Ruiz & Pavón;* (*Wilkes Exped.; Castelnau*). On sandy hills along the sea, Lurin, *5950* (type of the var.). Atocongo, *Pennell 14777* (det. Johnst.). Canta, *Pennell 14603* (det. Johnst.).—Amazonas: Chachapoyas, *Mathews.*—Huánuco: Mito, *1528* (det. M. & J.).—Arequipa: In the lomas, 40–575 meters, Posco, Mollendo, Mejia, (*Günther & Buchtien 178a; 178b; 178c; 2026*, all det. Bruns as *O. albicans;* Posco, *Günther & Buchtien 2033* and *Cachendo, 2034*, both det. Bruns as *O. stricta*). Widely distributed, and typically in the United States. "Yerba del Clavo cimarrona," "antayahua."

Oenothera multicaulis R. & P. Fl. Peruv. 3: 80. *pl. 317.* 1802; 756. *Xylopleurum multicaule* (R. & P.) Loesn. Repert. Sp. Nov. 12: 237. 1913. *O. multicaulis* R. & P. var. *petiolaris* Ball, Journ. Linn. Soc. Bot. 22: 38. 1885. *O. Barbeyana* Lévl. Monde des Plantes 8: *pl. 109.* 1898, fide Munz & Johnst.

Tufted perennial herb, the prostrate-ascending stems sometimes rather woody toward the base, rarely sparsely branched, often a dm. long or much longer; rosette leaves broadly oblanceolate, 1–5 cm. long, 5–25 mm. wide, narrowed at base to winged petiole about as long as blade, the soft pubescence mostly confined to the margins and the nerves beneath, entire or subentire, as also the more or less ovate subsessile stem leaves; flowers solitary, sessile, axillary, yellow or greenish drying orange, 3–6 mm. long, the calyx lobes, these without free tips in bud, as long as the petals; capsules clavate, villous to nearly glabrous, arcuate, barely 3–4 mm. thick in upper half including the 4 angles or wings; seeds 1–1.5 mm. long.—The var. *tarquensis* (HBK.) Munz & Johnst. l.c. 18 (*X. multicaule* (R. & P.) Loesn. var. *tarquensis* (HBK.) M. & J. fide Diels, Bibl. Bot. 116: 119. 1937), has villous stems and leaves, the latter often denticulate, capsules 4–5 mm. thick, seeds 0.5–0.9 mm. long; more northern in range, it is said to be sometimes intermediate in character in southern Ecuador. Common between 3,500 and 4,500 meters (Weberbauer). Type from "provinces of Tarma and Canta." F.M. Neg. 38412 (*tarquensis*).

Cajamarca: Region Bambamarca, 2,900 meters, *Stork & Horton 10029.*—Junín: Tarma, *Ruiz & Pavón,* type. In grass steppes, Palca, 2,700 meters, *Weberbauer 2446* (det. Krause); 248. La Oroya, 3,700 meters, *Weberbauer 1707* (det. Krause); 180. Above Yauli, 4,400 meters, Weberbauer, 221; *Stork & Horton 10869.*—

Lima: Chicla (*Ball*). Matucana, *Savatier 358; 393*. Canta, *Pennell 14602*. Río Blanco, *746* (det. Johnst.). Above Samanco at 3,700 meters, Weberbauer, 171.—Amazonas: Chachapoyas, *Mathews*.—Huánuco: Grassy banks, southeast of the town, at 3,150 meters, *2136* (det. M. & J.).—Cuzco: Ollantaytambo, 3,000 meters, (*Cook & Gilbert*). Valle del Paucartambo, 3,500 meters, *Herrera 1403; 1025a*. Cuzco, *Herrera 77; 167; 421; 439* (all det. Lewin).—Puno: *Soukup 104*. Bolivia to Ecuador. "Gahuar-chchuncca," "saya-saya," "huailla-cajetilla."

Oenothera nana Griseb. Goett. Abh. 19: 143. 1874; 649. *O. punae* Kuntze, Rev. Gen. 3, pt. 2: 99. 1898. *Raimannia punae* Sprague & Riley, Kew Bull. 201. 1921.

Acaulescent perennial, the thick caudex often branching and thus producing 2–several tufted rosettes and sometimes prostrate stems to 1 dm. long; leaves lanceolate to linear, 2–5 cm. long, 2–5 mm. wide, acute, entire to sinuate-denticulate and apparently crisped, finely strigose; petiole winged, 1–2 cm. long; flowers sessile in the axils of the rosette, the petals yellow, becoming orange or reddish-brown, 4–5 mm. long and nearly as wide; calyx tube about 5 mm. long, strigose without, pubescent within, the lobes 3–4 mm. long, separate in anthesis, the free tips 0.5 mm. long; style shorter than the filaments, pubescent at very base; stigma lobes 2–3 mm. long; capsule slightly narrowed toward tip, 1–1.5 cm. long, about 2 mm. thick; seeds brownish with darker spots, thick-ellipsoid, cellular pitted, about 1 mm. long.—Illustrated, as *O. Mandonii* Lévl., a synonym, Monde des Plantes 8: no. 109, opposite page 48.

Moquehua: Carumas, *Weberbauer 7324*.—Puno: Occa Pampa, Huancané, (*Shepard 86*). Near Puno, 4,000 meters, *Soukup 105*. Lake Titicaca, 3,820 meters, *Vargas 1275*. Bolivia and Argentina.

Oenothera rosea Ait. Hort. Kew. ed. 1. 2: 3. 1789; 762. *Xylopleurum roseum* (Ait.) Raim. in Engl. & Prantl, Pflanzenfam. 3, 7: 214. 1893. *O. rubra* Cav. Icon. 4: 68. *pl. 400*. 1797. *O. virgata* R. & P. Fl. Peruv. 3: 79. *pl. 315*. 1802. *O. psychrophila* Ball, Journ. Linn. Soc. Bot. 22: 38. 1885, fide Munz; but as "*psycrophila*."

Perennial, but blooming as an annual, the erect or ascending more or less strigulose stems sometimes a meter high or higher; lower leaves oblanceolate, subentire to subpinnatifid, 3–4 cm. long, narrowed to slender petioles 1–2 cm. long, the uppermost reduced to narrow bracts subtending the roseate or reddish-violet flowers; calyx tube 4–8 mm. long, the lobes about as long and with free tips

1 mm. long; petals 5–10 mm. long; capsule obovoid with 4 winged angles 8–10 mm. long, the faces ridged, the stipe-like base or pedicel hollow and ribbed, 5–20 mm. long; seeds about 0.6 mm. long.—Common at Cercado, Chancay and Huánuco (R. & P.). Employed as an infusion like tea; also beaten to make a dressing for wounds and to absorb the blood of bruises resulting from blows (Herrera). F.M. Neg. 14015 (*virgata*).

Lima: Chancay, *Dombey*. Chicla (*Ball*, type, *O. psychrophila*). Rimac (*Ball*). Lima, *61* (det. M. & J.).—Huánuco: *Ruiz & Pavón*, (type, *O. virgata*); *2062*.—Junín: La Oroya, (*Kalenborn 144*). Tarma, *Killip & Smith 21889*.—Amazonas: Hacienda Limon near Balsas, *Osgood & Anderson 66*.—Cuzco: San Sebastián, (*Pennell 13609*, det. Munz). Cuzco, *Herrera 175; 356* (det. Harms); *526* (det. Lewin). Valle del Apurímac, *Herrera 763*.—Arequipa: Near Mejia, 200 meters, (*Günther & Buchtien 177*, det. Bruns). Bolivia to southwestern United States and widely naturalized elsewhere. "Gahuar-chchuncca," "yahuar-chchuncca," "yahuarchonca," "chupa sangre."

Oenothera rubida Rusby, Bull. N. Y. Bot. Gard. 8: 110. 1912.

Typically simple, erect, the stems gray-pubescent or white-pilose toward the tips, and the capsules and leaves beneath often more or less purplish-tinged; leaves 2–4 cm. long, 3–6 mm. wide, lanceolate, acuminate, short-petioled, unequally and shortly serrate-dentate, thick; petals 5–10 mm. long, the lanceolate-acuminate calyx lobes about one-third the length of the tube and somewhat shorter than the petals which are little longer than the broad filaments; stigma lobes 2.5 mm. long; capsules 18 mm. long, 5 mm. thick, lance-oblong, coarsely ribbed; seeds angled, small, ovoid, black.—Seems to be near the Bolivian *O. elongata* Rusby, which is greener and has larger flowers and slender capsules.

Apurímac: Ascunción Bridge, Apurímac River, 3,700 meters, *Vargas 11044*.—Cuzco: Valle del Urubamba, 2,900 meters, at Ollantaytambo, (*Herrera 689*).—Arequipa: Arequipa, (*Williams 2524*, type). Rocky banks, *Pennell 14279* (det. Johnst.). El Chachán, 2,400 meters, (*Hinckley 68*, det. Munz & Johnst.).—Puno: Sandía, *Soukup 209*. "Saya-saya."

Oenothera verrucosa Johnst. Contr. Gray Herb. 70: 77. 1924; 657. *O. arequipensis* Munz & Johnst. Contr. Gray Herb. 75: 20. 1925.

Annual, erect and simple or branching from the base and decumbent, to 2 dm. high, crisped-pubescent on stems, calyces, and capsules

as well as with some long stiff hairs and some glandular ones, especially above; leaves nearly glabrous to villous, lanceolate, sessile or the lower short-petioled and oblanceolate, 1–6 cm. long, 4–15 mm. wide, more or less and irregularly denticulate, but slightly reduced above; flowers often even in the lowest axils, the yellow petals drying red, 4–9 mm. long; calyx tube 5–20 mm. long, pubescent and villous without, somewhat puberulent within, the lobes 4–10 mm. long, usually separate at anthesis, the free tips 1–3 mm. long; filaments flattened, to 8 mm. long; stigma lobes thick, about 2 mm. long; capsules 10–22 mm. long, 2.5–3.5 mm. thick, subsessile, noticeably contracted at base and apex; seeds yellowish to brown, about 1 mm. long, round-obovoid, obscurely ridged and pitted.—Differs from *O. laciniata* in having the capsule narrowed at each end and from *O. coquimbensis* Gay, 657, of Chile in its thicker, more pitted seeds, thicker stigma lobes, flattened filaments and less dentate leaves.

Arequipa: Slopes of Chachani, (*Hinkley 17*, type). Arequipa, open gravelly slopes, *Pennell 13174*. Mollendo, (*Johnston 3556; 6303*); *Hitchcock 22403* (type, *O. arequipensis*). "Choclillo."

5. FUCHSIA L.

Shrubs, the Peruvian often subscandent or sprawling in other vegetation. Leaves opposite or verticillate, sometimes alternate, sometimes lacking at flowering time. Flowers showy, axillary or terminal, the tube prolonged beyond the ovary and in the Peruvian species with petals (these sometimes lacking) nodose at base. Hypanthium (calyx) lobes or sepals usually red and longer than the petals. Stamens often unequal. Ovary 4-celled, the often exserted style capitate with entire or shortly lobed stigma. Fruit baccate, dry-pulpy, indehiscent.—The apetalous species are epiphytes or according to Weberbauer at least one may be either terrestrial or epiphytic. The genus commemorates Leonhard Fuchs, German (Schwaben) botanical author, notably of an herbal, and professor of medicine in the early sixteenth century.

For convenience I have divided the species with petals into large- and small-flowered groups, the size of the flowers within certain limits apparently being constant enough but as suggested by Bentham the character of the inflorescence is probably the more significant; it takes experience, however, to distinguish always between small- and foliose-bracted, and axillary forms. Particularly doubtful is the significance in itself of the shape of the petals, especially their degree of acuteness; also, the presence or absence of pubescence within the

tube and on the style, unless associated with other characters, seems, in my observation, to be of questionable taxonomic value. Nevertheless I have been confronted, as so often, with the necessity of a general reduction or with the adoption of these characters; the result of course has been that several more specimens are proposed as representing "species."

This species concept seems to be narrow or the species are local; probably when more material accumulates many of the described forms will be found to be of little or no taxonomic merit. Certainly some of the Peruvian plants nearly match earlier described Ecuadorian or Colombian collections, which therefore have been mentioned. Some of the characters which even now it seems to me are proving to be variable have been noted in the case of a few species. But otherwise this résumé like others in this work is a compilation. Besides the following, Weberbauer, 171, has recorded the occurrence of *F. integrifolia* Camb. at 3,700 meters in Ancash above Samanco; it seems highly improbable that that species of eastern Brazil grows in western Peru.

Flowers with petals but these often shorter than the colored sepals.

Flowers large, 4–5 cm. long or longer (fully developed; ovary tip to tips of sepals).

Flowers solitary or geminate, some at least in the axils of developed, little reduced upper leaves, or these young and subtending buds or just opened flowers (*F. denticulata* exceptionally opens its flowers ahead of developed leaves, these then bract-like but calyx tube is cylindrical).

Petals obtuse or acutish to acuminate, usually about oblong, in any case not broadly obovate nor broadly rounded apically.

Calyx tube subcylindrical; style glabrous or nearly. *F. denticulata.*

Calyx tube funnelform, clearly narrowed to base.

Leaves obviously, sometimes shortly, petioled.

Leaves glabrous, unless on the veins and then especially beneath.

Leaves elliptic, about twice as long as broad; buds with free tips..... *F. Woytkowskii.*

Leaves oblongish, many at least three times longer than broad; buds with tips coalescent.

Petals obtuse or apiculate, shorter than calyx. *F. leptopoda.*

Petals acute, longer than calyx.

Leaves entire or nearly, pubescent beneath. *F. macropetala.*

Leaves closely denticulate, minutely strigillose beneath..... *F. Llewelynii.*

Leaves evenly puberulent above, more or less hirtellous beneath..... *F. Asplundii.*

Leaves sessile or essentially..... *F. rivularis.*

Petals broadly obtuse to rounded (if apiculate rarely, bluntly so), broadly obovate or subrotund.

Leaves often ternate; style glabrous.

Leaves hirtellous both sides..... *F. ayavacensis.*

Leaves glabrous above or minutely villous on nerves. *F. austromontana.*

Leaves opposite or alternate; style pilose below (typically). *F. platypetala.*

Flowers small- or leafy-bracted, sometimes few, terminal on the main or lateral branches, when axillary in the upper leaves these obviously reduced and bract-like; calyx funnelform.

Flowers foliose-bracted, that is, expanded before the upper leaves are fully developed, these then bract-like, sometimes reduced, rarely lacking; in one species leaves only 1–2 cm. long.

Leaves oblong-lanceolate, medium to large.

Petals longer than sepals.

Leaves entire..... *F. macropetala.*

Leaves closely serrate..... *F. Llewelynii.*

Petals shorter than sepals or nearly as long.

Leaves glabrous, entire..... *F. simplicicaulis.*

Leaves pubescent, remotely denticulate..... *F. Fischeri.*

Leaves ovate or broadly elliptic or small.

Leaves only 1 cm. long..... *F. confertifolia.*

Leaves several to many cm. long.

Leaves entire; petioles short (cf. *F. rivularis*, leaves sessile).

Petals rounded; ovary glabrous..... *F. glaberrima.*

Petals acute; ovary pulverulent..... *F. Munzii.*

Leaves obviously denticulate; petioles elongate. *F. tincta.*

Flowers small-bracted, the bracts even if broad, short, many times smaller than the uppermost leaves, often narrow or subulate; leaves never small (*F. Llewelynii*, imperfectly known, has petals longer than sepals).

Leaves broadly elliptic.

Leaves, if pilose, with petioles 1 cm. long or longer.

Leaves glabrous.

Ovary glabrate; style glabrous.....*F. Aspiazui.*

Ovary puberulent; style pilose.....*F. Munzii.*

Leaves pilose, at least beneath.....*F. corymbiflora.*

Leaves reddish-pilose beneath, the petioles short. *F. Mathewsii.*

Leaves oblong-lanceolate, short-petioled.....*F. abrupta.*

Flowers small or medium, 2–3 (3.5) cm. long.

Stipules persisting more or less clearly as a recurved annulus.

Petals rounded; leaves opposite.....*F. glaberrima.*

Petals acute; leaves partly remote.....*F. Munzii.*

Stipules more or less promptly caducous, small, distant.

Bracts small, subulate or narrow, the flowers thus borne in an inflorescence, this terminal or axillary and often subtended by the more or less reduced uppermost leaves.

Leaves more or less distinctly pubescent beneath, rarely sparsely.....*F. asperifolia, F. ovalis.*

Leaves glabrous or usually puberulent, never pubescent.

Leaves large on elongate petioles.....*F. macrophylla.*

Leaves medium, the petioles short.....*F. Osgoodii.*

Bracts foliose or large (reduced leaves) or leaves little reduced above the flowers, these thus more or less strictly axillary or more or less racemose.

Uppermost leaves reduced, bract-like, rarely modified as bracts but large; petioles, at least in part, elongate, except *F. Weberbaueri.*

Bracts more or less reduced leaves.

Leaves ample, several to many cm. wide.

Leaves entire or subentire.....*F. macrophylla.*

Leaves distinctly denticulate.....*F. tincta.*

Leaves narrow, 1–2 (3) cm. wide.

Petioles subequal, short.

Flowers about 2.5 cm. long or shorter. *F. sanctaerosae, F. Weberbaueri.*

Flowers 3.5 cm. long..... *F. Osgoodii.*

Petioles very unequal, 1 elongate..... *F. pilosa.*

Bracts suborbicular..... *F. sylvatica.*

Uppermost leaves little if at all reduced, the flowers axillary; petioles rarely 1 cm. long (in *F. sanctaerosae*, crowded when young).

Leaves medium in size, at least many of them 5–8 cm. long, subentire, typically membranous and glabrescent..... *F. sanctaerosae.*

Leaves small or on younger branches or vigorous shoots 5–6 cm. long, typically closely denticulate and more or less pilose.

Petals oblong-obovate; pubescence fine, rather soft. *F. decussata.*

Petals broadly rounded; pubescence stiff, brown. *F. fusca.*

Flowers without petals.

Flowers solitary or crowded terminally, 5–15 cm. long.

Flowers all or mostly crowded terminally; leaves, if present, few and mostly or all undeveloped.

Flowers more or less pilose as the young leaves if any. *F. apetala.*

Flowers glabrous or nearly; leaves puberulent... *F. Mattoana.*

Flowers borne in the axils of well-developed leaves. *F. tuberosa.*

Flowers many in axillary racemes..... *F. cestroides.*

Fuchsia abrupta Johnst. Contr. Gray Herb. 75: 37. 1925.

Scandent, the glabrous divaricate branches about 5 mm. thick; petioles 4–8 mm. long; leaves subcoriaceous, opposite, lanceolate or oblanceolate, narrowed both ends, 8–12 cm. long, 2.5–4 cm. wide, entire, glabrous above, paler beneath, villous-puberulent on the nerves, those of the inflorescence abruptly reduced to bracts; flowers in a terminal raceme becoming 1–2 dm. long, the pedicels 2.5–4 cm. long; ovary 7 mm. long, glabrous; hypanthium 3.5–4.5 cm. long, nearly cylindrical, glabrous without, villous within toward the base; sepals lanceolate, 13–15 mm. long, subequaled by the oblong-

obtuse but mucronulate petals, these longer than the unequal stamens; style villous below the stigma, lightly 4-lobed; fruit cylindrical, 13 mm. long, 4 mm. thick.—Well marked by its elongate bicolored leaves that are suddenly reduced in the terminal racemose inflorescence (Johnston). The rather small flowers seem to distinguish it from apparent relatives.

Huánuco: Along river at Cushi, 1,500 meters, *4541*, type.

Fuchsia apetala R. & P. Fl. Peruv. 3: 89. *pl. 322*. 1802. *F. macrantha* Hook. Bot. Mag. *pl. 4233*. 1846. *F. hirsuta* Hemsl. Journ. Bot. 14: 69. 1876.

Epiphyte creeping on partly shaded mossy tree branches, in sphagnum or in rocks, the older stems with exfoliating bark; new leaves appearing at flowering time and only partly or sometimes not at all developed, more or less densely pilose, becoming a dm. long, 4–6 cm. wide or larger, rounded at base, shortly acute, crowded at end of branches below the clustered flowers, these from few to several cm. to 15 cm. long, the tube somewhat dilated below the short limb and above the narrow base but, in general, subcylindrical, pilose to greater or less degree; stamens nearly as long as the rather blunt ovate sepals, these about 1 cm. long, the stigma becoming well-exserted; pedicels short, 1–2 cm. long; fruits 2 cm. long, about half as thick, the stem, at their maturity, often again leafless.—Reproducing by corms and long stolons which follow the rock crevices (Vargas). The flowers increase in length after opening.

The type collections which I have seen leave little doubt, it seems to me, that this is the true type and that the plate and description calling for a short ampliated flower is an error; probably, as apparently in *F. tuberosa*, the flowers vary in this respect. Cf. however Hemsley, Journ. Bot. 14: 67–70. 1876. I think with Diels, Bibl. Bot. 116: 119. 1937, that it is very doubtful if Hemsley's separation of the named specimens on relative flower-part measurements "holds"; these "characters" may well be due to ecological factors or to the degree of maturity. *F. hirsuta* is admittedly based on "quite young specimens." My collection *4970* shows open flowers 6–12 cm. long, moderately ampliated; *4901*, slender and all elongate, representing *F. macrantha*. About Cuzco the flowers are usually a few cm. long, abruptly ampliated and probably could be called *F. hirsuta* except that they are often glabrate. F.M. Negs. 13957; 26137. Illustrated, Bot. Mag. *pl. 4233*.

Huánuco: Huassahuassi & Muña, *Ruiz & Pavón*, type. Monzón, *Weberbauer 3364*. Tambo de Vaca, *4901*. Andamarca (*Mathews*

1197, type, *F. macrantha*). Villcabamba, *4970*.—Cuzco: Hills of Saxaihuamán, 3,500 meters, *Herrera 2189; Weddell*. Dept. unknown, Churupullana, *Dombey*. Tres Cruces, Paucartambo, *Weberbauer 6975*. In fissures of calcareous rocks, Chincheros, 3,700 meters, *Vargas 9602*. Epiphytic climber in forest, Pucará, *Vargas 11170*.—Puno: *Soukup 525*. Without locality, *Lechler 1989* (type, *F. hirsuta*, flowers to 5 cm. long, shaggy). Bolivia.

Fuchsia asperifolia Krause, Repert. Nov. Sp. 1: 169. 1905.

Low, simple or sparsely branched, the younger branches or stems, petioles and leaves, these at least beneath on the nerves, rather densely hirsutulous-pilose; petioles 2–4 cm. long; leaves rarely ternate, entire, elliptic-obovate, to 10 cm. long and half as wide, membranous; flowers subsessile, congested terminally, narrowly bracted, about 2 cm. long, little ampliate, roseate, hirsutulous without, densely pilose within below; sepals ovate, acuminate, equaled by the acutish narrowly obovate scarlet petals; stamens included, the style as long as the calyx.—Allied by the author to *F. ovalis* and *F. corymbiflora* and seemingly correctly, if indeed it is not an undeveloped specimen of the former with only one young inflorescence. F.M. Neg. 13958.

Amazonas: Between Tambos Bagazán & Almirante, 2,700 meters, *Weberbauer 4445*, type.

Fuchsia Aspiazui Macbr., spec. nov.

Fruticans fere glabra; ramulis circa 5 mm. crassis glabris; foliis oppositis ellipticis vel elliptico-obovatis basi apiceque plus minusve acuminatis, plerumque 5 cm. latis, 10–13 cm. longis vel inferioribus ad 2 dm. longis, 1 dm. latis, integerrimis, subcoriaceis, glaberrimis; petiolis 7–10 (–20) mm. longis; inflorescentia demum longe racemosa parvibracteata; bracteis ovato-lanceolatis circa 10 mm. longis pedicellis glabratis subaequalibus; ovario anguste cylindrico-oblongo glabrato 6–8 mm. longo, circa 1.5 mm. lato; hypanthio ad 7 cm. longo basi nodoso basim versus 1.5 vel vix 2 mm. crasso supra medium subabrupte ampliato 3–4 mm. crasso extus glaberrimo intus infra medium piloso; sepalis dissimilis 2 anguste spatulatis 2 fere oblongis subobtusis, 14 mm. longis, circa 5 mm. latis; petalis late oblongis apice rotundatis minute crenulatis 10 mm. longis, 4 mm. latis; staminibus manifeste inaequalibus longioribus petalis brevioribus; stylo vix exserto glabro; fructu submaturo oblongo-ellipsoideo 13 mm. longo 4 mm. crasso.—Apparently nearest *F. corymbiflora* R. & P.; it differs from *F. glaberrima* in small bracts, glabrous style.

If new, its name will with merit record the botanical enthusiasm of Dr. R. Aspiazu, distinguished physician of Lima, who has always generously aided botanical collecting.

Libertad: Valley of the Mixiollo, 2,300 meters, prov. Pataz, *Weberbauer 7042*, type.

Fuchsia Asplundii Macbr., spec. nov.

Fruticosa; ramulis (subteretibus) petiolis foliisque plus minusve cum pilis crispis brevibus cinereo-pubescentibus; petiolis 4–10 mm. longis; foliis 3–4-natim verticillatis oblongo-lanceolatis vel interdum ovato-ellipticis, integris vel remote et obscure calloso-denticulatis, basi acutis, apice acuminatis, praesertim subtus laxe et breviter hirsutulis plerumque 6 cm. longis, 22 mm. latis; pedicellis distincte axillaribus usque 12 mm. longis; ovario crispe villoso fusiformi 6 mm. longo, circa 1 mm. crasso; hypanthio 5 cm. longo basi nodoso deinde paullo constricto superne mediocriter ampliato 5–6 mm. crasso sparse villoso intus breviter villoso infra medium; sepalis anguste lanceolatis acuminatis 11 mm. longis quam petala oblongo- vel ovato-elliptica paullo longioribus subacuta vel obtusa; antheris oblongo-globosis; stylo infra medium satis dense piloso; bacca circa 1 cm. longa, hirsutula.—This and the following species and their immediate relatives may well be found with more collections to be based on variable characters; at present, however, with the acceptance of petal-shape and -size in relation to sepals, pubescence on style, and like characters as criteria for the definition of specific units, it seems necessary to propose it as undescribed. It is, apparently, nearly *F. rivularis* but the leaves are narrower, petioled and puberulent above. *F. hirtella* HBK., Nov. Gen. & Sp. 6: 107. 1823, of Colombia, has leaves broadly rounded at base, sparsely hirtellous above, more densely beneath, the flowers subracemose; style, ex char., glabrous. *F. ayavacensis* and rels. have obovate-rounded or ovate and obtuse petals only about half as long as sepals.

Named for my friend Dr. Erik Asplund of Stockholm, whose collections and studies of Andean plants make association of his name with this apparently undescribed Peruvian *Fuchsia* particularly well merited.

Piura: Above Palambla, Huancabamba, 3,000 meters, *Weberbauer 6054*, type.

Fuchsia austromontana Johnst. Journ. Arnold Arb. 20: 242. 1939.

Tall loosely branched shrub, the leaves often ternate on densely villous petioles 2–4 mm. long; leaves mostly ovate-lanceolate, 2.2–5

cm. long, 0.8–2.3 cm. wide, more or less villous-puberulent on the veins, otherwise glabrescent, acute at base, gradually acuminate, denticulate; pedicels axillary, 1–2 cm. long, glabrate; ovary glabrous or sparsely villous, 6–8 mm. long, 2–2.5 mm. thick; hypanthium 2.5–4 cm. long, sparsely villous without and within only in the lower third, the bulbous base 3–5 mm. thick, 1 cm. above the base 2.5–3 mm. thick; sepals lanceolate, 15–17 mm. long, about 4 mm. broad at base; petals broadly obovate, (11) 14 mm. long, (8) 11 mm. broad, rounded apically, 2–4 mm. shorter than the sepals, these slightly longer than the unequal stamens; style glabrous to base.—Allied by the author, apparently correctly, to *F. denticulata*, but the extremely broad rounded petals are at variance; *Pennell 13970*, however, which seems to be the same, has bluntly apiculate petals. See *F. canescens* Benth. under *F. Woytkowskii*.

Cuzco: Between Pillahuata and Acanacu, 2,000 meters, flowers brilliant scarlet, (*James West 7083*, type); *Vargas 10*. Pillahuata, Cerro de Cusilluyoc, 3,300 meters, *Pennell 14110; 13970*. Achirani, Paucartambo, *Vargas 11121* (det. Standl. as *F. denticulata*).

Fuchsia ayavacensis HBK. Nov. Gen. & Sp. 6: 107. 1823. *F. ampliata* Benth. Pl. Hartw. 178. 1845.

Hirsutulous shrub-liana with ternate oblong-elliptic obsoletely and remotely denticulate leaves; branchlets, petioles and pedicels densely hirtellous; petioles 8 mm. long; leaves shortly narrowed both ends, acute, minutely and sparsely but evenly puberulent above, hirsutulous beneath, to 7.5 cm. long, 2.5 cm. wide or often mostly 3–4 cm. long, membranous, net-veined; internodes short, the flowers thus crowded in the upper axils; flowers 5–6 cm. long; pedicels 1 cm. long or longer; hypanthium about 3.5 cm. long, lightly pilose within, without, gradually enlarged to 5–6 mm. broad below the sepals, these oblong-lanceolate, acute, 14–18 mm. long; petals suborbicular obovate, rounded, 5–7 mm. broad, 8–9 mm. long; stamens unequal, long-exserted, the longer a little longer than the petals; style glabrous, exserted (fide HBK.).—*Weberbauer 3903* distributed as *F. ampliata* Benth. is better developed than type, which is not good. *F. Hitchcockii* Johnst. (cf. *F. platypetala*) of Ecuador differs, according to the author, in its coarser pubescence, longer flowers (tube 5–6 cm.), narrower sepals, pilose style. Too similar seems *F. Townsendii* Johnst., Contr. Gray Herb. 75: 33, also Ecuadorian, the leaves larger, acuminate, pubescence denser, shorter; the former has rounded, the latter ovate, obtuse petals. F.M. Neg. 38413.

Piura: Ayavaca, 1,400 meters, *Bonpland*, type.—Cajamarca: San Miguel, 2,600 meters, *Weberbauer 3903*(?). Ecuador.

Fuchsia cestroides Schulze-Menz, Notizbl. Bot. Gart. Berlin 15: 137. 1940.

Erect shrub, the leafy virgate branches pulverulent toward the tips; petioles ternate, puberulent-pilose, 3–4 mm. long; leaves nearly elliptic, acute both ends, minutely callous-denticulate, firm, glabrous or obscurely pulverulent above, mostly minutely pilose on the veins beneath, 6–8 cm. long, 2.5–3.5 cm. broad, the upper not at all or little reduced; flowers in axillary often geminate racemes, these 2.5 cm. long, densely and shortly pilose; pedicels 3 mm. long or sometimes longer, the tardily caducous, linear-lanceolate bracts to 5 mm. long; ovary about 2 mm. long, pilose; hypanthium 1.5 cm. long (perhaps longer at maturity), 1.5 mm. thick at the base, gradually ampliated above, sparsely villous without and within in the lower part; sepals ovate, acute, 7 mm. long, nearly equaled by the 4 longer stamens; petals none; anthers globose; style glabrous; fruit oblong-ellipsoid, pilose.—Shrub with the aspect of petaliferous species.

Piura: Below Frias, Ayavaca, 1,100 meters, *Weberbauer 6423*, type.

Fuchsia confertifolia Field. & Gardner, Sert. Pl. 1: *pl. 28.* 1844. *F. dolichantha* Krause, Repert. Nov. Sp. 1: 172. 1905.

Probably rambling or supported in other shrubs, the densely leafy branches rusty-hirsute; leaves crowded, 2–4-verticillate, shortly petioled, ovate, acute, entire or nearly, pellucid-punctate, glabrous between the more or less hirsutulous veins and margins, 1–2 cm. long and half as broad; flowers crimson, glabrous, 5 cm. long or longer, corymbose or umbellate at the ends of the branchlets, often few or solitary; calyx lobes narrow, acute, little if any longer than the acute lanceolate-elliptic petals which are about equaled by the style and unequal stamens; stigma capitate; style, fide Krause, pilose below; fruit strongly verruculose.—*F. quinduensis* HBK., Nov. Gen. & Sp. 6: 105. 1823, has membranous remotely denticulate oblong-elliptic leaves, glabrous beneath, about 2 cm. long, less than half as broad. F.M. Neg. 13961.

Amazonas: East of Chachapoyas at Tambo Ventillas, 2,400 meters, *Weberbauer 4390* (type, *F. dolichantha*); 263. San Carlos, *Weberbauer 7153*. Near Paramo, 3,300 meters, *Stuebel 31*. Without locality, (*Mathews 1478*, type).

Fuchsia corymbiflora R. & P. Fl. Peruv. 3: 87. *pl. 325.* 1802. *F. boliviana* Carr. Rev. Hort. 48: 150 & *pl.* 1875. *F. velutina* Johnst. Contr. Gray Herb. 75: 36. 1925. *F. dependens* Hook. Icon. 1: *pl. 65.* 1837.

Conspicuously to moderately or minutely ashy-pilose liana with opposite elliptic entire or subentire leaves and terminal short-bracted racemes of showy red flowers; stipules small, deciduous; petioles usually 1–2 cm. long; leaves rounded to the shortly acute base, shortly acuminate, green and glabrate above or softly pilose all over and especially beneath where sometimes velvety, often about 5 cm. wide and twice as long; buds more or less apiculate by the scarcely if at all free calyx tips; flowers more or less pubescent without or within (in the type nearly to petals), rather dilated above or, in the southern part of the range, more nearly tubular, 6–7 cm. long; sepals and petals both narrow, the latter shorter or slightly longer than the former, about 1.5 cm. long; style pubescent in type (always?); fruit purplish, ovate-oblong. Ovary seems to vary ovoid to oblong, typically villous, sometimes glabrous.—The var. *alba* L. Van Houtte, known only in horticulture, has roseate-white calyx tube.

When Johnston described his species and attempted also to distinguish *F. boliviana* (cf. l.c. 37) he accepted (in accord with precedent) the presence or absence of pubescence in the flower tube as a character of importance; perhaps the character is significant and in this case the species as defined here is an aggregate, but the type has the tube pubescent within. I see no real distinction in the shape of the calyx tube but one might conveniently regard the southern specimens as a variety. It is true that *F. velutina* is exceptionally few-flowered and the petals elongate—scarcely specific distinctions.—Cultivated; fruits edible, taste sweetish (Mexia), slightly narcotic (Herrera). *F. furfuracea* Johnst. l.c. 39, Bolivian, is characterized by free tips of the buds, the hispid leaves minutely furfuraceous seen under binocular. Cf. also *F. miniata* Pl. & Lind. under *F. tincta.*

Herrera, Rev. Mus. Nac. Lima 4: 85. 1935, gives a note on the significance of the Quechua names.—Illustrated, Bot. Reg. 26: *pl. 70;* Bot. Mag. *pl. 4000.*

Huánuco: Chinchao & Muña, *Ruiz & Pavón,* type. Yanano, 1,800 meters, *3715* (type, *F. velutina*). Carpish, 2,850 meters, *Stork 9921.* Huánuco, (*Haenke*).—Cajamarca: Chugar, *Weberbauer 4097.* —Ayacucho: Tambo, 3,100 meters, *Weberbauer 5555* (det. Johnst.

as *F. boliviana*).—Apurímac: Ampuy, *Stork, Horton & Vargas 19595.* —Cuzco: San Miguel, Valle del Urubamba, (*Cook & Gilbert 915*, det. Johnst. as *F. boliviana*); also at Ollantaytambo, (*Cook & Gilbert 290; 443*). Near Urubamba, 2,900 meters, (*Herrera 1058*); *1123;* in garden, *Soukup 28.*—Puno: Sandía, *Weberbauer 557;* 237.—Without locality, *Gay.* Argentina to Colombia; Venezuela; Jamaica. "Chimpu-chimpu," "ccapac-nucchchu."

Fuchsia decussata R. & P. Fl. Peruv. 3: 88. *pl. 323.* 1802. *F. scandens* Krause, Repert. Nov. Sp. 1: 171. 1905. *F. fontinalis* Macbr. Candollea 8: 25. 1940, ex char. *F. apiculata* Johnst. Contr. Gray Herb. 75: 34. 1925, ex char.

Suffrutescent, often supported in other shrubs, the slender stems and many branchlets somewhat reddish brown or purplish and more or less puberulent-hispidulous; leaves fasciculate, obscurely denticulate, paler and more or less pilose beneath, minutely and sparsely strigillose above or glabrate, somewhat attenuate at base, acute or obtusish, mostly 1.5 cm. long and about half as wide, but often two or three or even four times larger; pedicels 2–6 cm. long; flowers axillary, 15–25 mm. long, the petals oblong-obovate, acute or obtuse equaling the narrowly lanceolate sepals, not very much shorter than the tube, this pilose within to glabrous without (as to type), or glabrous, equaled by the stamens, the style longer; fruit ellipsoid, 7 mm. long.—*F. scandens* was described as having flowers even 4 cm. long (but photograph shows only flowers about 2 cm. long), glabrous within as without, the petals broader and obtuse but number *3615* is glabrous within but pubescent without, the broad petals scarcely half the length of the sepals, the flowers between *F. scandens* and *F. decussata* in size but in pubescence it approaches *F. fusca* and in petals *F. apiculata* Johnst. perhaps the same, sens. lat. *F. corollata* Benth. Pl. Hartw. 179. 1845 has ovate sepals and petals, the latter somewhat exceeding the former, 14–16 mm. long. F.M. Neg. 13975 (*scandens*); *26140.*

Huánuco: Muña, *Ruiz & Pavón,* type. Between the valleys of the Monzón and the Marañón, in the mountains, 3,300 meters, in shrubs, *Weberbauer 3324* (type, *F. scandens*); 253. Southeast of Huánuco, *2081; 2124* (det. Johnst.). Panao, 3,000 meters, *3615* (det. Johnst.). Carpish, 2,800 meters, *Stork & Horton 9911* (det. Standl.). Tambo de Vaca, 4,000 meters, *4414.*—Ayacucho: Prov. Huanta, *Weberbauer 5578.*—Amazonas: Chachapoyas, *Mathews* (type, *F. fontinalis*).

Fuchsia denticulata R. & P. Fl. Peruv. 3: 87. *pl. 325.* 1802. *F. serratifolia* R. & P. l.c. 86. *pl. 323. F. tacsoniiflora* Krause, Repert. Nov. Sp. 1: 172. 1905.

Suffrutescent, usually sparsely branched, the long branchlets often supported in trees for many meters, glabrous or the leaves especially beneath and on the midnerves, as also the flowers, sparsely and minutely pilose; petioles 1–3 cm. long; stipules deciduous, small; leaves oblong- or elliptic-lanceolate, more or less narrowed at base, acute, opposite or mostly in 3's or 4's, those of the flowering branches usually about 7–10 cm. long, 2.5–3 cm. wide or on twigs only in bud noticeably smaller, the lower larger, subentire to remotely and minutely, often, too, somewhat repandly, denticulate, firm-membranous, obviously veiny, the lateral nerves marked, especially on the paler under surface; flowers axillary, 5–7 cm. long; peduncles 2–4 cm. long, longer in fruit; calyx tube typically little dilated above, usually 5–6 mm. thick, 2–3.5 cm. long or, as here interpreted, sometimes gradually ampliated from a narrow base, slightly to abundantly villous within but often perfectly glabrous without, the lanceolate lobes 15–20 mm. long, longer than the oblong-obovate, acute or obtuse, not exactly flat petals, these about equaled by the stamens; stigma capitate, 4-lobed; fruit purplish, oblong.—Calyx rose or deeper red, the petals a bright or brick-red, the calyx lobes greenish at tip. I was unable at Madrid to separate the type material into the two species of Ruiz and Pavón, granting a slight variation in pubescence and in shape of petals. Under the name *F. serratifolia* a "hybr. alba" is known in horticulture. The fruit is edible; the Indian name means "planta formosa" (Ruiz & Pavón). F.M. Negs. 26141; 29518 (*serratifolia*); 13978 (*tacsoniiflora*).

Lima: San Buenaventura, *Née.* Above San Mateo, 3,200 meters, *Weberbauer 252* (type, *F. tacsoniiflora*); 171; *Isern 2546.* Río Blanco, *723.*—Junín: Vitoc, *Isern 2546bis.*—Huánuco: Muña, *Ruiz & Pavón* (type, *F. serratifolia*); *4284* (det. Johnst., *F. denticulata*). Huassahuassi (& Cheuchin, dept. Lima), *Ruiz & Pavón* (type, *F. denticulata*). Mito, 3,000 meters, *1403* (det. Johnst.). Pillao, *Ruiz & Pavón.* Carpish, *Stork & Horton 9843* (det. Standl.). Southeast of Huánuco, *2082* (det. Johnst.). Pampayacu, *Sawada P8.* Huánuco, (*Haenke,* fide Presl).—Huancavelica: East of Surcubamba, *Stork & Horton 10367* (det. Standl.). Salcabamba, *Stork & Horton 10261* (det. Standl., as *F. macropetala,* petals obtuse).—Ayacucho: Choimacota Valley, 2,900 meters, *Weberbauer 7587; 7587a* (det. Johnst.).—Amazonas: Near Chachapoyas, *Weberbauer 4437*(?); 266. Bolivia(?); Ecuador(?). "Uchucollgo," "mollo-ccantu."

Fuchsia Fischeri Macbr., sp. nov.

Frutex ut videtur suberectus ramosus, cortice ferrugineo partibus superioribus dense hirsutulo obtectus; stipulis subulatis subpersistentibus; petiolis oppositis 2–5 mm. longis; foliis oblongo-lanceolatis acutis ad basin cuneato-attenuatis, obscure calloso-denticulatis vel subintegris utrinque cum pilis brevibus molliter denseque pubescentibus, nervis venisque subtus satis prominentibus; floribus terminalibus in corymbum folio-bracteatum dispositis 5–6 cm. longis; pedicellis circa 1.5 cm. longis; ovario velutino 4 mm. longo; hypanthio circa 4.5 cm. longo basi nodoso deinde subconstricto apicem versus ampliato 4–5 mm. crasso extus et intus leviter villoso; sepalis lanceolatis acuminatis 10–12 mm. longis; petalis anguste oblongo-lanceolatis breviter acuminatis circa 9 mm. longis; staminibus inaequalibus (antheris oblongo-ovalis) quam petala brevioribus; stylo pubescente plus minusve exserto.—Simulating in pubescence and foliage *F. ayavacensis* and especially *F. petiolaris* HBK., Nov. Gen. & Sp. 6: 104. 1823, Colombian, this typically glabrous even to the style but apparently sometimes pubescent as also style; the flowers, however, of *F. petiolaris* are constantly axillary. Cf. also *F. hirtella* HBK. under *F. Asplundii*, apparently similar but style described as glabrous, flowers subracemose, as also *F. macrostigma* Benth. under *F. platypetala*.

The conscientious photographing of plant types by Paul Fischer of Switzerland, especially at Paris under difficult conditions, is with pleasure recorded in proposing his name for this apparently undescribed species.

Cajamarca: Chugar, Hualgayoc, 2,700 meters, *Weberbauer 4097*, type. Prov. Chota, *Stork & Horton 10073*(?) less pubescent, flowers shorter, leaves ternate).

Fuchsia fusca Krause, Bot. Jahrb. 37: 599. 1906.

Similar in habit and foliage to *F. decussata* but the branchlets pubescent with rather stiff trichomes, the leaves beneath, especially toward the petiole, rusty hirsute-pilose, the trichomes long; leaves minutely hispidulous above, rarely 2.5 cm. long; calyx tube about 18 mm. long, sparsely pilose without, densely villous within below, the lobes about 10 mm. long, subequaling the scarlet broadly rounded ovate petals, the stamens a little shorter than these, the style a little longer; stigma capitate, subentire; fruit oblong.—Perhaps distinct by virtue of the brown, relatively coarse pubescence and the somewhat different petals; cf. note under *F. decussata*. F.M. Neg. 13962.

Cuzco: Below Yanamanche, toward St. Ana, 3,300 meters, *Weberbauer 4975*, type; 244.—Ayacucho: Osno, *Weberbauer 5578* (det. Markgr.).

Fuchsia glaberrima Johnst. Contr. Gray Herb. 75: 32. 1925.

Ample-leaved glabrous shrub, immediately marked by the persisting stipules of the opposite leaves, the stipules to 2.5 mm. high, 4–5 mm. broad, confluent to form a single coarse broad persistent reflexed appendage on each side of the stem (Johnston); leaves attenuate to base, subsessile or shortly petioled, entire, to 2 dm. long and nearly half as wide; flowers on pedicels about 7 mm. long, clustered in a short terminal raceme bracted by reduced leaves; ovary fusiform, 8–9 mm. long; hypanthium 2.5–3 cm. long, enlarging to 6 mm. in diameter, glabrous without, densely pubescent within; sepals oblong, 9–11 mm. long, the broadly obovate apically rounded petals shorter; style densely pubescent, the stigma lightly lobed.—Distinguished by the author from *F. longiflora* Benth., Pl. Hartw. 177. 1845 (*F. spectabilis* Hook., Bot. Mag. 64: *pl. 4375*. 1848, no doubt at least sens. lat., as suggested by Johnston, l.c. 34), by its smaller flowers borne in a terminal cluster, densely pubescent rather than sparsely villous calyx tube within and eciliate leaves. Diels, Bibl. Bot. 116: 119. 1937, remarks: very near *F. spectabilis;* similar but leaves more narrowed is Raimondi specimen from Peru.

Amazonas: Between Chachapoyas and Moyobamba, *Raimondi* (det. Diels). Ecuador.

Fuchsia leptopoda Krause, Repert. Nov. Sp. 1: 171. 1905. *F. siphonantha* Krause, l.c. 173(?).

As to type, much branched shrub to 3 meters with glabrous brown bark, the lower branchlets terete, the upper tetragonous, deeply sulcate; leaves opposite and ternate (petioles slender 5–20 mm. long), herbaceous, glabrous or especially on veins minutely pilose, narrowly elliptic, acute both ends, entire or remotely subdenticulate, usually 6–10 cm. long and (at middle) 3.5 cm. wide, the nerves prominent beneath; flowers axillary, 6–6.5 cm. long on slender peduncles 4 cm. long; ovary oblong, sparsely and minutely pilose; calyx tube roseate, glabrate, densely villous within (lower quarter), base nodose, then somewhat contracted, ampliated toward tip; petals puniceous, spathulate, about half as long as sepals, these linear-lanceolate, very acute, 20–23 mm. long, about equaled by the stamens.—Description after Krause; his diagnosis of *F. siphonantha* differs: sparsely branched, the younger branchlets sometimes puberulent; leaves subcoriaceous,

drying black, contracted to base, 6–12 cm. long, 2–5 cm. wide; flowers to 9 cm. long, pedicels 2–4 cm. long; petals narrowly obovate, obtuse, little shorter than sepals.—*Weberbauer 2178*, first cited by the author, has much smaller leaves, shorter pedicels and flowers than *2179*, which must be the specimen described. *F. leptopoda* is not clearly distinguishable from *F. petiolaris* HBK., Nov. Gen. & Sp. 6: 104. 1823, of Colombia, but the latter may have more uniformly oblong-elliptic or lance-oblong leaves, the style said to be glabrous. *F. venusta* HBK., l.c. 105, is probably the earlier name, sens. lat., but it may have somewhat broader glabrous leaves; the style, described as glabrous, is pilose below. Cf. also *F. curviflora* Benth. under *F. Woytkowskii*.

The following collections are referred here with some doubt. F.M. Negs. 13967; 13877 (*siphonantha*).

Junín: Between Huacapistana and Palca, 2,200 meters, (*Weberbauer 1772*, type); 247. Mountains to east of Huacapistana, 2,600 meters, (*Weberbauer 2728; 2729*, type sheets *F. siphonantha*).—Ayacucho: Yanamonte, Prov. Huanta, 2,700 meters, *Weberbauer 5641*(?).—Cuzco: Tres Cruces, Prov. Paucartambo, *Weberbauer 6934*(?).

Fuchsia Llewelynii Macbr., sp. nov.

Frutex; ramis conspicue verrucosis; petiolis 3–5 mm. longis; foliis superioribus ternatis oblongo-lanceolatis vel paullo oblanceolatis basim versus attenuatis, apice acutis, 7–9 cm. longis, 2–2.5 cm. latis, satis dense denticulatis, subcoriaceis, ut videtur utrinque glabris sed supra minutissime sparseque pulverulentis in sicco nigrescens subtus pallidioribus in venis obscure puberulo-strigillosis; floribus 6.5 cm. longis; hypanthio circa 5 cm. longo basi subnodoso supra medium (fere) apicem versus gradatim mediocriter ampliato 4–5 mm. crasso glabro intus infra medium dense piloso; sepalis ovato-lanceolatis acuminatis basim versus circa 3.5 mm. latis, circa 10 mm. longis; petalis fere oblongis 12–14 mm. longis peracutis vel caudato-acuminatis suberosis; staminibus subaequalibus quam sepala paullo brevioribus; antheris oblongis; stylo dense villoso cum stigmate subintegro coronato.—In spite of the broken character of the specimen (due to transport between collecting stations) it is apparently an undescribed species; as noted by Bentham, *F. canescens* Benth., *F. macropetala* Presl and *F. corollata* Benth., are the only species with petals longer than sepals; the first has leaves rounded at base, the second subentire leaves pubescent beneath, the third, apparently nearest, much smaller flowers and smaller obovate leaves. According

to the collector's recollection, the plant was about 1.5 meters high, the flowers clustered terminally among reduced leaves, and the broken pieces suggest this. However, from *F. leptopoda*, *F. glaberrima* et rels. its acuminate petals at once distinguish it.

Amazonas: Among shrubs on exposed rocky slopes, La Ventana road, Chachapoyas to Moyobamba, *Llewelyn Williams 7594*, type.

Fuchsia macropetala Presl, Rel. Haenk. 2: 28. 1831.

Branches tetragonous, glabrous, the slightly enlarged internodes scarcely 2.5 cm. distant; petioles about 4 mm. long; leaves opposite, oblong-lanceolate, acuminate, entire or nearly, above under a lens minutely puberulent, rather densely pubescent beneath; pedicels (as also the young branchlets) densely and very shortly pubescent, 2 cm. long, erect, solitary in the axils of the upper leaves or terminally subcorymbose; calyx at least 3.5 cm. long, glabrous, the sepals 3 times shorter than the tube, oblong-lanceolate, acute, the petals oblong, shortly acuminate, well-exceeding the sepals; stamens subexserted; style filiform, the stigma capitate, 4-lobed, ovate, minutely and densely puberulent; berry nearly 10 mm. long, ovoid, subglobose.—Possibly *F. denticulata* sens. lat. but the calyx may not be cylindrical; also, as remarked by Bentham, the petals, ex char., exceed the sepals.

Huánuco: In the mountains, (*Haenke*).

Fucshia macrophylla Johnst. Contr. Gray Herb. 75: 35. 1925.

A laxly branched shrub to 15 dm. high with fistulose stems 4–6 mm. thick, the younger parts puberulent; leaves opposite, elliptic or broadly oblanceolate, rarely oblong-lanceolate, gradually attenuate to the elongate petiole (this 2–4 cm. long), conspicuously acuminate, herbaceous, puberulent, entire or somewhat undulate; stipules deciduous, filiform; flowers red, solitary in the axils on short branchlets, thus bracted by the young leaves and appearing loosely corymbose; pedicels 1–2 cm. long; ovary puberulent, 5 mm. long; hypanthium about 23 mm. long, gradually ampliate to 4.5 mm. thick, puberulent without; petals oblanceolate, 9–10 mm. long, rounded but mucronulate, just equalling the acute sepals and the unequal stamens; style villous, the stigma subentire.—Distinct from *F. ovalis* in habit, puberulence and in inflorescence. The Isern material has shorter petioles. The questioned collections, both bearing separate names of Johnston, unpublished, suggest greatly *F. Andrei* Johnston, Colombian species, l.c. 31; cf. under *F. ovalis*. *F. atrorubra* Johnst., l.c. presumably, ex char., would be sought here: the flowers

dark, scarcely 2.5 cm. long, more or less in a terminal raceme, the medium size leaves (4–12×2–5 cm.) densely strigose beneath on the veins.

Junín: Along streams, Hacienda Schunke, near La Merced, 1,200 meters, *5616*, type. Chanchamayo, *Isern 2364*. Pichis Trail, 1,600 meters, *Killip & Smith 25436*(?).—Huánuco: Cuchero, *Poeppig 1081*. Shrub in tall forest, 1,750 meters, Churubamba, *Mexia 8142* (det. Johnst.).—San Martín: Valle de Vitoc, *Isern 2556*.—Ayacucho: Ccarrapa, 1,500 meters, *Killip & Smith 22353*(?).

Fuchsia Mathewsii Macbr. Candollea 8: 24. 1940.

Ramulis petiolisque et foliis subtus praesertim ad venas dense ferrugineo-pilosis; petiolis 4–5 mm. longis 3-natim verticillatis; foliis fere 1 dm. longis, 3–4.5 cm. latis ad basin breviter attenuatis, apice acutis, obscure denticulatis vel subintegris, supra minute ad costam dense pilosis; floribus terminalibus in paniculam brevibracteatum dispositis circa 5 cm. longis; hypanthio glabrato intus infra medium hirsutulo 4 cm. longo paullo ampliato; sepalis 10 mm. longis petala oblongo-obovata paullo superantibus.—Apparently nearest *F. pilosa* to which it had been referred, but differing in its short-petioled leaves, denser shorter pubescence and in its larger flowers.

Amazonas: Chachapoyas, *Mathews*, type.

Fuchsia Mattoana Krause, Bot. Jahrb. 37: 599. 1906.

Epiphytic branching shrub, the branchlets minutely puberulent, the leaves crowded at their tips; petioles (only uppermost known) 3–5 mm. long; leaves narrowly elliptic or ovate, narrowed to both ends, acuminate, 3.5–5 cm. long, 12–20 mm. wide, granulate-pulverulent, especially beneath; flowers many, about 6 cm. long, terminal or rarely solitary in the upper axils; pedicels 2–3 (–4) cm. long, slender; calyx tube cinnabarine, strongly dilated above, nearly glabrous without, shortly pilose within below, 2.5–3 cm. long, the ovate-acute lobes about 2 cm. long, little exceeded by the stamens and style, this white pilose toward the base.—Distinguished by the author from *F. insignis* Hemsl., Journ. Bot. 14: 70, Ecuadorian, the stamens and style long-exserted (longer filaments 2 cm. long), by the abundant leaves and short stamens and style but apparently nearer (and perhaps not distinct) to *F. salicifolia* Hemsl., l.c., which differs, from description, only in included stamens and in being glabrous except for the flowers; it is from "Sandillani" (*Pearce*), and is probably the correct name; on the other hand, doubtfully distinct from *F. tuberosa*.

Named, in accordance with Weberbauer's wish, for a "Dr. D. Matto of Cuzco, a zealous explorer of the Peruvian flora," but apparently of extreme modesty, his name otherwise being unknown in botanical literature.

Cuzco: At Santa Ana, in shrubs, 3,400 meters, *Weberbauer 4976*, type; 244.

Fuchsia Munzii Macbr., sp. nov.

Ramulis virgatis teretibus glabris; petiolis circa 5 mm. longis; stipulis plus minusve connatis; foliis ternatis fere ellipticis (vel superioribus reductis interdum oblongo-lanceolatis) plerumque 8–10 cm. longis circa 4.5 cm. latis, basi acutis, apice acuminatis, subintegris, obscure et remote undulato-calloso-denticulatis subcoriaceis glabris, nervis venisque praesertim subtus satis prominentibus; floribus in racemum parvifoliate bracteatum terminalem dispositis circa 5 mm. longe pedicellatis; ovario ovoideo dense pulverulento 4 mm. longo, circa 2 mm. crasso; hypanthio 2.5–4 cm. longo basi nodoso deinde subcontracto apicem versus gradatim ampliatis circa 4 mm. crasso glabro intus brevissime fulvo-puberulento; sepalis fere oblongo-linearibus 10 mm. longis; petalis oblongis quam sepala vix vel haud brevioribus apice subacutis margine erosis; staminibus inclusis; antheris subsphaeroideis; stylo infra medium dense fulvo-piloso cum stigmate obscure lobato coronato.—Apparently distinct and nearest *F. glaberrima* and rels. from which it differs in petals and pubescence.

Junín: Río Masamerich, 2,300 meters, *Weberbauer 6648*, type.

Fuchsia Osgoodii Macbr., sp. nov.

Glaberrima; ramulis gracilibus, internodiis circa 5 cm. longis; petiolis 5–10 mm. longis; foliis ut videtur oppositis oblongo-ellipticis basi plus minusve attenuato-acutis, apice subacuminatis, integerrimis, firmis; floribus graciliter (circa 15 mm. longe) pedicellatis ut videtur ad apicem ramulorum in inflorescentiam foliosam et brevibracteatum aggregatis; hypanthio vix 2.5 cm. longo nodoso superne gradatim ampliato, intus infra medium leviter piloso; sepalis oblongis subabrupte apiculato-acutis 12 mm. longis 5–7 mm. latis quam petala oblonga obtuse apiculata erosa paullo brevioribus; staminibus inaequalibus inclusis; stylo glabro, stigmate 4-lobato.—Among the few species with fully grown petals exceeding the sepals (cf. note under *F. Llewelynii*) this appears to have no near relative; it simulates *F. sanctaerosae* with smaller axillary racemose flowers, petals scarcely as long as sepals. I welcome this opportunity to name a plant for

the Curator Emeritus of Field Museum's Department of Zoology, who has collected many botanical specimens about the world.

Libertad: Uchco, June 25, 1912, *W. H. Osgood & M. P. Anderson 47*, type.

Fuchsia ovalis R. & P. Fl. Peruv. 3: 87. *pl. 324*. 1802. *F. polyanthella* Johnst. Contr. Gray Herb. 75: 36. 1905.

Shrub becoming scandent or more or less supported in other shrubs, the younger branches finely hispidulous; leaves broadly elliptic, attenuate to the hispidulous petiole (this 2–5 cm. long) acute, ample, often 5–7 cm. wide, membranous, rather conspicuously hispidulous and ciliate, entire or denticulate; stipules subulate, rather tardily deciduous; flowers 12–20 mm. long in a terminal leafy-bracted raceme (much elongated in age) and similar axillary branchlets, the peduncles shorter than the lance-acuminate bracts; calyx tube slightly ampliated above, glabrous or somewhat pilose, within villous below (at least as to type), the lanceolate sepals about 1 cm. long, the obovate-oblong petals about the same length as also the stamens and the glabrous style, the globose stigma 4-lobed; fruit about 1 cm. long, reddish-purple.—Johnston described the inflorescence of his species as an "open terminal panicle formed of pedunculate short small-bracted racemes developing from the upper leaf-axils," which, from the material seen by me of *F. ovalis* seems to me to be the same although from the original description and plate one could not know this surely. Then, too, Ruiz & Pavón described the petals as half as long as the sepals, while in type material they are nearly as long. *F. decussata*, *F. denticulata* and other species may have either glabrous or pubescent flowers. The Stork & Horton specimen apparently is a variety differing in less pubescent short-petioled leaves, these glabrous above. It also suggests in its "dark coral red flowers" *F. atrorubra* Johnst. (cf. *F. macrophylla*, but the style is glabrous). It may become var. **aberrans** Macbr., var. nov. foliis supra glabris subtus sparse vel obscure praesertim ad costam pilosis. *F. Andrei* Johnst., Contr. Gray Herb. 75: 31. 1925, has leaves glabrous and lustrous above, minutely villous on nerves beneath; the surface pebbled (beneath binocular), the style villous below; cf. *F. Hartwegi* Benth. with small leaves as noted under *F. Weberbaueri* Krause. F.M. Neg. 26145.

Cajamarca: Arenales, Prov. Cutervo, 3,000 meters, *Stork & Horton 10155*.—Huánuco: Muña, *Ruiz & Pavón*, type; *4290* (type, *F. polyanthella*); *Weberbauer 6721*.—San Martín: Moyobamba, *Weberbauer 4729*.

Fuchsia pilosa Field. & Gardner, Sert. Pl. 1: *pl. 27.* 1844.

A shrub, except for the petals, stamens and style, thinly covered with short white hairs; petioles ternately verticillate, 2 of them 5–7 mm. long, the third at least 2 cm. long, the leaf blade somewhat larger than the others; leaves oblong-lanceolate, acuminate, acute or shortly attenuate at base, minutely glandular-denticulate, 7–10 cm. long, 18–22 mm. wide or the lower probably larger; racemes terminal, peduncled, pendulous, to a dm. long or longer, the bracts, shaped like reduced leaves, 12–25 mm. long; pedicels a few mm. long; flowers scarlet, crowded, about 3 cm. long, the oblongish calyx lobes with a prominent subulate cusp nearly equaled by the obtuse, slightly broader petals, the style little exceeding the included stamens; fruit oblong, 4-angled, less than 10 mm. long.

Amazonas: Taulia, (*Mathews 1482*, type).

Fuchsia platypetala Johnst. Journ. Arnold Arb. 20: 241. 1939.

A shrub 2–3 meters high, with ascending branchlets, the younger clothed with curved trichomes, 0.2–0.3 mm. long, at maturity glabrescent; petioles 4–15 mm. long, opposite or alternate, the lanceolate leaves acute at both ends, 2.5–7.5 cm. long, 1–2.3 cm. broad slightly below the middle, scarcely abundantly pubescent with often curved trichomes, 0.1–0.3 mm. long, paler beneath, denticulate; flowers solitary or geminate in the upper axils or crowded in loose leafy racemes; pedicels about as long as or longer than the leaves; ovary 8–10 mm. long, 1.5–3 mm. thick, somewhat hispidulous; hypanthium 4.5–5 cm. long, bulbous at base, constricted to 2 or 3 mm. thick, ampliating to 9 mm. in diameter, sparsely hispidulous without, pilose within to 1 cm. below the apex; sepals 1.5–2 cm. long, 3–4 mm. broad at base, apically attenuate; petals 14–16 mm. long, obovate, to 1 cm. broad, rounded or broadly obtuse; longer stamens subequaling the petals; anthers oblong, to 3.5 mm. long; style pilose below the middle.—Petals described by collector as crimson, but according to author the dried petals appeared to have a large central oblong white or yellowish spot from the base to beyond the middle, the remaining part of the petal crimson, the sepals similarly marked near the base. Apparently here would be sought *F. longiflora* Benth. Pl. Hartw. 177. 1845 (*F. spectabilis* Hook.); cf. note under *F. glaberrima;* the Ecuadorian plant of Bentham has much shorter petioled leaves, longer flowers and it seems doubtful if the Cuzco collection referred to it can really be the same. *F. Hitchcockii* Johnst., Contr. Gray Herb. 75: 33. 1925, has somewhat broader leaves, attenuate at base, ashy-villous beneath. *F. macrostigma* Benth., Pl. Hartw. 129.

1844, has membranous leaves minutely punctate-puberulent both sides, short pedicels, subequal petals and sepals.

Apurímac: Chinchero, along lanes in town, semicultivated but reported as wild nearby, "Serafina," 2,930 meters, (*James West 3705*, type).—Cuzco: Cultivated in gardens, 3,350 meters, (*Herrera 1514*). Yanamanche, (*Weberbauer 4952*(?)—det. Herb. Dahlem, *F. longiflora* Benth.).

Fuchsia rivularis Macbr. Candollea 8: 24. 1940.

Ramulis puberulis; foliis ternatim verticillatis sessilibus vel obscure petiolatis ovato-ellipticis 5–6.5 cm. longis, 2.5–3 cm. latis, satis abrupte acuminatis integris supra glabris subtus laxe pilosis; floribus axillaribus sed foliis superne saepe valde reductis 6.5–7.5 cm. longis; pedicellis 1 cm. longis; hypanthio sparse puberulo gradatim ampliato intus basin versus paullo piloso, 4.5 cm. longo; sepalis anguste lanceolatis longe acuminatis circa 2 cm. longis petala oblongo subaequalibus; staminibus quam petala brevioribus.—Possibly a form of *F. ayavacensis* HBK. or *F. hirtella* HBK. (cf. note under former) in spite of the broader sessile leaves and somewhat different pubescence.

Amazonas: Chachapoyas, *Mathews*, type.

Fuchsia sanctaerosae Kuntze, Rev. Gen. 3, pt. 2: 98. 1898. *F. Brittonii* Johnst. Contr. Gray Herb. 75: 39. 1925 (*F. boliviana* Britt., not Carr.), fide Johnston in herb.

Much branched, glabrous, or the midnerve of the opposite or ternate leaves somewhat pilose beneath; petioles 3–15 mm. long; leaves oblong- or ovate-lanceolate, acute both ends, subentire, often 7–8 cm. long, about 2.5 cm. wide, the upper sometimes smaller; flowers axillary on slender pedicels, some 1 cm. long or longer, 2–2.5 cm. long, glabrous without, pubescent within; petals oblongish, acute or obtuse, about equaling the acute sepals, these 7–10 mm. long; style glabrous; stamens somewhat unequal, nearly as long as sepals; fruit verruculose, subspheroid or oblong.—Kuntze wrote the name "Sanctae-Rosae." Herrera has accredited the name *Brittonii* to "Munz & Johnston."

F. loxensis HBK., Nov. Gen. & Sp. 6: 106. 1823 (*F. umbrosa* Benth. Pl. Hartw. 176. 1845), of Ecuador, is similar but the leaves are loosely hirsute on the nerves beneath and shorter (about 2.5×5–6 cm.), barely acute, remotely callous-denticulate; *F. verrucosa* Benth., l.c. 178, *F. scabriuscula* Benth., l.c. 177, have short pedicels, firm, prominently reticulate leaves, those of the former Colombian species

glabrous or scabrous beneath, of the latter (Ecuadorian) hirsutulous. *F. pallescens* Diels, Notizbl. Bot. Gart. Berlin 14: 34. 1938, of Ecuador, with membranous, nearly glabrous leaves, 6–7 cm. long, 3.5 cm. broad, and pale (pink) flowers may also be expected. *F. perbrevis* Johnst., Contr. Gray Herb. 75: 30. 1925, is unique in its short flowers, these with tube merely 3–5 mm. long, the broad sepals about twice as long; *F. hypoleuca* Johnst., l.c. 34, of Ecuador, resembles *F. scabriuscula* Benth. but "differs in its narrow (1–1.7×3–7.5 cm.) ternate leaves, canescent rather than brownish pubescence."

Cuzco: Among ruins, Cerro Machu-picchu, Prov. Urubamba, 2,400 meters, *Mexia 8078* (det. Johnst.; apparently toward *F. Weberbaueri*); (*Herrera 2014*). Urubamba Valley, 1,800 meters, (*Cook & Gilbert 1110*, fide Johnst.). Paucartambo, *West 7891; Vargas 82.* Cerro de Cusilluyoc, *Pennell 13997* (det. Johnst.). Valle de San Miguel, *Herrera 2914.* Bolivia.

Fuchsia simplicicaulis R. & P. Fl. Peruv. 3: 89. *pl. 322.* 1802.

Graceful glabrous slender simple-stemmed suffrutescent with whorled narrowly lanceolate long-acuminate subsessile leaves that are shorter than the long internodes; leaves to about a dm. long but usually little more than a cm. wide, net-veined, obsoletely denticulate; flowers axillary in the upper leaf-whorls on short peduncles; calyx tube rose-colored, puberulent, about 7 cm. long, the lobes longer than the red petals which are equaled by the stamens and style, the stigma capitate, 4-lobed; fruit pubescent.—An elegant species that is unmistakable because of its habit and foliage and, according to Herrera, is cultivated in Cuzco gardens. The beautiful and distinct *F. Killipii* Johnst., Contr. Gray Herb. 81: 94. 1928, has elliptic-acute leaves obscurely puberulent when young, globose fruit, in this last respect as well as in its flat entire petals, differing from *F. venusta* HBK. F.M. Neg. 29516.

Huánuco: Muña, *Ruiz & Pavón*, type; *4014* (det. Johnst.).

Fuchsia sylvatica Benth. Pl. Hartw. 176. 1845.

Stems and leaves beneath on the veins rather densely and minutely puberulent, the stem tips, pedicels and ovaries canescently; stipules deciduous; petioles 5–15 mm. long, verticillate, the membranous leaf blades sparsely and minutely pilose above or glabrate, elliptic-obovate, cuneately rounded at base, acute, 7–11 cm. long or longer, 3–5 cm. wide; flowers slender, little dilated, in terminal racemes, the bracts nearly orbicular; pedicels 5–8 mm. long; calyx tube puberulent, 18 mm. long, the subequal lanceolate petals and

sepals about 10 mm. long.—Unfortunately I did not see the specimens upon which the Weberbauer record is based; the type is from Ecuador; possibly the Peruvian plant is *F. pilosa*. F.M. Neg. 26147.

Junín: West of Huacapistana, 3,000 meters (Weberbauer, 251). Below Huacapistana, 1,500 meters, (Weberbauer, 252). Ecuador.

Fuchsia tincta Johnst. Journ. Arnold Arb. 20: 242. 1939.

Shrubby to 1.5 meters high, the fistulose compressed branchlets abundantly villous with short trichomes; petioles opposite, 1–3 cm. long; leaves ovate, obtuse at base, acute or subacuminate, 10–15 cm. long, 7–10 cm. broad, membranous, evidently denticulate, inconspicuously villous and nervose beneath, densely minutely vesiculiferous or inconspicuously villous above; flowers in lax foliaceous-bracted terminal corymbs, the very slender villous pedicels 1.5–2 cm. long; ovary 4–5 mm. long, densely villous; hypanthium about 2 (–3?, *Vargas* spec.) cm. long, the bulbous base 1–1.5 mm. thick, narrower 5 mm. above the base, 3–4 mm. in diameter at apex, nearly glabrous without, conspicuously retrorsely villous within except the upper quarter; sepals about 1 cm. long, triangular, 3.8 mm. broad at base, acute; petals 6–7 mm. long, oblong ovate, 4 mm. broad, obtuse, mucronate, obviously shorter than the sepals, equaling or exceeding the longer stamens; style villous below the middle; fruit 7 mm. long, 4.5 mm. thick, scarcely mature.—Separated by the author from *F. macrophylla* and *F. asperifolia* by its broader, more herbaceous, denticulate leaves which are purplish beneath. Many species exhibit a purplish tinge, notably *F. miniata* Pl. & Lind. Fl. Serres 8: 7. *pl. 754*. 1852, apparently very distinct in its verticillate leaves, the flowers, at least in cultivation, 7 cm. long.

Cuzco: Río Tambomayo, Prov. Paucartambo, 2,000 meters, (*James West 7092; Vargas 73*, flowers longer). Cerro de Cusilluyoc, *Pennell 13956* (det. Johnst. as *F. Brittonii*).

Fuchsia tuberosa Krause, Repert. Nov. Sp. 1: 170. 1905. *F. chloroloba* Johnst. Journ. Arnold Arb. 20: 243. 1939. *F. inflata* Schulze-Menz, Notizbl. Bot. Gart. Berlin 15: 136. 1940.

Shrubby, the short or often virgate stems from stolon-like tuber-bearing roots; petioles reddish, often 3 cm. long or longer; leaves mature at flowering time, ovate-lanceolate, rounded to cordate at base, acuminate, subentire, glabrous, sometimes 10 cm. long, 3–4 cm. wide; flowers 6–8.5(12) cm. long, often shorter, terminal and crowded or axillary but with well-developed leaves, the pedicels soon elongating 2–5 cm.; calyx glabrous without, pilose within below, the

slender tube more or less abruptly dilated toward the ovate or narrower obtusish or acute calyx lobes, these 10–15 mm. long; longer stamens about equaling the calyx, the style somewhat longer, pilose (always?) the stigma somewhat 4-lobed.

Johnston wrote regarding his proposed species: "comparable to *F. salicifolia* Hemsley but larger throughout and the sepals green," scarcely significant taxonomic characters. As a matter of fact, *F. tuberosa* and *F. Mattoana* are probably variants of the Hemsley plant; cf. note under *F. apetala;* as much variation may be expected here, much more material and study is needed of the entire group. West observed the plant as chiefly epiphytic but occasionally terrestrial in humus, almost stemless to a bush 1 meter tall, roots with long clusters of tubers, nearly leafless at flowering time, flowers pendent with bright tube and parrot-green lobes. Weberbauer, 238, records it as epiphytic, 239, as in stones. F.M. Neg. 13979.

Cuzco: Pillahuata, Cerro de Cusilluyoc, 2,200 meters, shrub on open rock cliff, *Pennell 13973* (type, *F. chloroloba*). Above Cosñipata, 3,100 meters, flowers rose colored with greenish lobes, *Weberbauer 6935* (type, *F. inflata*). Río Tambomayo, 1,600–2,000 meters, *James West 7094*. Near Achirani, Prov. Paucartambo, *Vargas 11116* (det. Standl.).—Puno: Between Sandía and Cuyocuyo, in rocks, 2,700 meters, *Weberbauer 875*, type; 238, 239. "Puca-panucho."

Fuchsia Weberbaueri Krause, Repert. Nov. Sp. 1: 170. 1905.

An erect branched shrub about 4 meters high with slender 3–4-verticillate branches; leaves in verticils of 3–4, subcoriaceous, glabrous or nearly above, densely short-pilose beneath, at least on the midnerve, denticulate, narrowly elliptic, acute both ends or more or less rounded to the slender petiole, this about 1 cm. long, the blades often 8 cm. long, 2–2.5 cm. wide; flowers terminal and crowded in the upper axils, 2–3 cm. long, the pendent, slender peduncles about 5 mm. long; ovary oblong, sparsely pilose; calyx tube glabrous without, villous within below, enlarging little to the lanceolate sepals, these longer than the obovate mucronulate petals, nearly equaled by the stamens, the style scarcely longer, the stigma lightly 4-parted, capitate.—Allied by the author to *F. decussata* but with much larger leaves; apparently *F. sanctaerosae*, but the reduced bract-like upper leaves pilose on the midrib beneath are at variance though I doubt that these characters are constant. The glabrous or merely puberulent *F. sessilifolia* Benth., Pl. Hartw. 176. 1845, Colombian, differs in the narrower subsessile leaves, *F. Hartwegi*

Benth., l.c. 179, in the broader leaves rounded at base and lightly pilose-hirsute beneath. F.M. Neg. 13981.

Puno: In dense shrubbery, at 2,400 meters, Sandía, *Weberbauer 661;* 237.

Fuchsia Woytkowskii Macbr., sp. nov.

Ramulis glabris, virgatis; petiolis suboppositis 3–4 mm. longis; foliis glabris vel junioribus evanescente puberulis, intense viridibus, firmis subtus cum nervis paullo pallidioribus prominentibus ellipticis vel fere oblongis ubique acutis, integerrimis usque 7 cm. longis, 2.5 cm. latis (superioribus); pedicellis axillaribus 2–2.5 cm. longis; ovario circa 5 mm. longo, 2 mm. crasso, glabro; hypanthio glabro vel minutissime parceque puberulo intus infra medium satis piloso, 4 cm. longo nodosa superne gradatim ampliato; sepalis oblongis abrupte caudato-acuminatis 14 mm. longis in alabastro apicibus liberis circa 2.5 mm. longis; petalis fere oblongis vix 14 mm. longis apice obtusis; staminibus inaequalibus; stylo glabro stigmate leviter lobato coronato.—The free tips of the flower buds distinguish it from *F. leptopoda;* it is nearest perhaps to *F. venusta* HBK. Nov. Gen. & Sp. 6: 105. 1823, but that has acuminate calyx lobes, acute petals, style pilose below (described as glabrous). *F. canescens* Benth., Pl. Hartw. 178. 1845, has denticulate leaves sparsely pubescent beneath and obtusish or obtuse-obovate petals that plainly exceed the sepals; *F. curviflora* Benth., l.c. 177, may be known by its smaller ovate, remotely denticulate leaves and long flowers, the tube nearly 5 cm. long, the petals white.

The observing collector, who has found many interesting plants, noted it as "growing in borders of the forest in places exposed to the sun, attaining a height of 4 meters or more; the color of the flowers was deep vermilion; the abundance of *Thysanoptera* in flowers of such a dark red color astonished me much, as until now I have noticed that they avoid the above mentioned color."

Amazonas: Almirante, 1,900 meters, *Felix Woytkowski 38*, type.

NOTE to *Mouriria princeps*.—Tree to 14 meters; flowers on main trunk, white, pink-tinged, the filaments white, the anthers pink, yellow-tipped (Killip & Smith). Identification may not be certain because of the poor condition of the material; it could be referred to *M. grandiflora* or may be undescribed—the latter species bears its flowers on the branches (Ducke, Archiv. Inst. Biol. Veg. Rio Jan. 2:171. 1935) but the significance of this may not be established. Cf. also *M. cauliflora* Mart., which, however, has sharply acuminate leaves and, at least typically, less obvious lateral nerves. *M. micradenia* Ducke, l.c., to be expected since Amazonian, is most like *M. grandiflora* but the leaves are acute at base, the flowers all from the trunk.

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